MARCH, 1848.

VOLUME I. NO. III.

THE

# WESTERN JOURNAL,

OF

AGRICULTURE, MANUFACTURES, MECHANIC ARTS,
INTERNAL IMPROVEMENT, COMMERCE,

AND

# GENERAL LITERATURE.

Agriculture and the Mechanic Arts are the basis of Civilization.

M. TARVER AND T. F. RISK,
EDITORS AND PROPRIETORS.

PUBLISHED MONTHLY.

*SAINT LOUIS:*
CHARLES AND HAMMOND, CORNER MAIN AND OLIVE STREETS.
1848.

TERMS—$3 per annum in advance.

COMMUNICATIONS ARE INVITED UPON THE FOLLOWING SUBJECTS:

1. The adaptation of the Climate and Soil of the West to Sheep Growing, and the prospect of profit arising from this branch of husbandry.

2. Upon the introduction of Manufactures in the West.

3. Upon the subject of Internal Improvement in Missouri, and the Mississippi Valley in general, and the locations which will best promote the general interest.

4. The Internal Commerce of the United States.

5. The Mineral Resources of the Valley of the Mississippi.

6. Upon the culture of Hemp—including the details of sowing, reaping, rotting, breaking and manufacturing—with an account of the latest improvements and discoveries in each branch; and also the prospect of extending its uses and of increasing the demand. Likewise, a description of the soil and location best adapted to its growth.

7. Upon the culture and best mode of preparing Hops for market; the cost of production, and the kind of soil, &c., adapted to their growth.


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ST. LOUIS, MO.

**CHARLES & HAMMOND,**

**BOOK AND JOB PRINTERS,**

***Corner Main and Olive Streets,***

(Over E. W. Clark & Bro.'s Banking House,)

ST. LOUIS, MO.

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M. TARVER AND T. F. RISK,

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THE

# WESTERN JOURNAL.

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## ART. I.—ON THE CLASSIFICATION OF THE MINERAL MASSES COMPOSING THE EARTH.

In order that those who are not familiar with the principles of geology may form some definite idea of the basis of its classification of the mineral masses which enter into the constitution of the crust of the earth, it will be necessary to refer to some of the leading facts and general views embodied in the science.

The object of geology, in its most general sense, is to collect and associate all the facts and phenomena which are identified with the natural history of the earth. Its more definite objects are to ascertain the constitution of the mineral masses of which its crust is composed—their relation to each other, or their order of super-position—their relative ages as developed by the organic remains deposited in them, and the influence of physical laws and cosmical agencies in modifying their past and present condition. In the amplitude of its designs it embraces every fact and presses into service every principle which can reflect light upon the past history and present state of the earth. It thus becomes a complex science, borrowing the elements of its views, and the principles of its reasoning from other sciences, while it imparts to them in its turn, many new and valuable results.

In our geological enquiries, we may direct our attention to a great variety of objects of investigation. We may study the relations of the earth as one of the planetary masses of our solar system; the action and reaction which take place between it and other masses; how far these have influenced its physical condition; their comparative densities; and the probabilities in favor of an identity in constitution. In attaining these ends it becomes intimately associated with astronomy. If we extend our investigation to the statical and dynamical relations which have existed in past ages, and which, perhaps, (somewhat modified,) are still operative in modelling and fashioning the surface of the globe, giving it its agreeable and

beautiful diversity of mountain and valley, of hill and dale, of streamlet and river, of lake and ocean. We study it in relation to general physics and physical geography—the latter having first unfolded its principles and gave rise to its earliest development as a science.

In directing our enquiries to the elementary constitution of the rocks which form the upper layers of the body of the earth, their lithological characters and the influence which one may have exercised in the formation of another, our results become intimately associated with those of chemistry and mineralogy.

If we extend our observation again, to a survey of the organic remains embedded in these mineral masses—to the local influence or universality of the causes which operated during their existence—to the relative ages of these rocks as characterized by differences of genera or species in their faunas and floras, we discover relations which form the subordinate ground-work of modern classifications in geology, and blend it intimately with botany and zoology.

Directing our enquiries to the chemical constitution of these diversified masses, to the changes which occur in them from atmospheric agencies—the variety of soil to which their decomposition gives rise—the influence which their elevation or depression—their absorption or radiation of heat—their permeability or impermeability to moisture, exercises on the transparency, density and temperature of the atmosphere, and consequently, their influence on climate, we give to geology a still wider range, and study it in that philosophical method which enables us to trace the influence of the inorganic world upon the development of organized forms of being, and thus indirectly associates it with the science of life.

Lastly, we may survey these mineral masses in their distribution, as modified and rendered available to the arts and commerce of the world; their influence in varying the forms of human industry, giving rise to national peculiarities and to national wealth, and in aiding the regular advancement of kingdoms and nations in the march of civilization and refinement. In this view it becomes more practical in its results, and intimately identifies itself with the principles of political economy and enlightened legislation.

It will be perceived from this general summary of the leading objects of geological enquiry, that as a science it is almost umlimited in extent; and involves in its considerations questions of the highest moment, and of the deepest philosophical interest.

The earth, as is well known, is an oblate spheriod, being compressed at the poles and elevated to a corresponding extent at the equator. This difference between its polar and equatorial diameter, is considered a conclusive proof that at one time it was in a state of fusion—its ellipticity being the result of a centrifugal force operating on it at the time. Its loss of heat, and consequent contraction in cooling, must have had a powerful agency in producing the irregularities of its surface. Since it was prepared for the abode of man and the present races of animals, it has experienced no appreciable loss of heat or change in its density.

Modern calculations, founded on geodesical measurements, give it an ellipticity of 1-299, being a difference of about 23 1-5 geographical miles between its polar and equatorial diameter.

This spheroidal figure of the earth is not uniform in its outline, but is interrupted by lofty mountains and elevated table lands, by deep valleys and water-worn channels. Were the waters which fill its profoundest depressions and constitute oceans and inland seas, removed, its continental masses and islands, would appear as elevated table lands and mountain chains, and the irregularity and boldness of its form would be materially increased.

These continental masses and islands form the smaller portion of its surface in contact with the atmosphere, or the ærial ocean which surrounds it. The relative proportion of the land to the water being estimated at about as 1 to 2.8, or, according to Rigaud, as 1 to 2.7. The islands, it is estimated, would form only about 1-23 part of the continents: and, by refering to the globe, it will be found that the northern contains three times as much land as the southern hemisphere, and that the major axes, or lines of elevation above the sea, on the two continents, are opposite in direction.

The mean density of the earth has been recently estimated at 5.44, distilled water being 1. The strata near the surface giving only a density of 2.7, and when taken with that of the ocean, gives a density of only 1.6. These estimates have led to the important inference of the greater density of the interior portions of the globe.

The temperature of the earth is partly derived from the sun, while it has temperature of its own, which is supposed to be the residum left after it had cooled by radiating its heat into the space which surrounds it. Its own internal heat exercises no influence on the temperature at the surface, for, reaching a line below the surface, called the line of no variation, it is uniform at all seasons. This line of no variation is only a foot below the surface at the equator, and is found to increase in depth towards the poles. From this line of no variation the temperature of the earth increases as we descend towards its centre. Accurate measurements have established the fact that for every 54½ feet of descent there is an increase of one degree of Fahrenheit's scale. The arithmetical ratio of these numbers would give a temperature sufficient to melt granite at the distance of twenty-one miles below the surface. From this regular increase in temperature it has been infered by some that the centre of the earth is still in a state of fusion. But this, it is obvious, can only be received as a plausible conjecture; for, so far as the interior of the earth is concerned, we cannot determine anything except its temperature and its density. The labors of the geologist are limited to its surface or the various masses which are presented by the disruptions in its external crust. By examining the arrangement of these as presented in the deepest mines, which are only about one-third of a mile below the level of the ocean, and on the flanks of the highest mountain ranges, which do not exceed six miles in elevation, and

by comparing observations made at different and distant points on the earth, a regularity and order in the relations of these masses have been found to exist, which scarcely could have been anticipated in the midst of such seeming confusion Though this field of observation is exceedingly limited when compared with the whole diameter of the earth, it has proved amply sufficient to give us a knowledge of its constitution and the series of revolutions by which its gradual development to its present condition has been characterized.

The varying constitution of these masses—the regularity of their arrangement in a successive series, or their order of super-position, one above another—the organic remains which have been found in them, and which defines their relative ages, have all been carefully studied, and have resulted in a more definite and natural division in their classification.

The general divisions established among the different formations have been founded either on their relative ages or their origin. The subdivisions into orders of these classes, seems to have been much more arbitrary, for the principal groups in each have been designated in some instances by terms expressive of the constitution of some prominent rock in the formation, and in others by the names of countries or places in which they are found distributed to the greatest extent.

Following the arrangement into classes and principal groups most commonly received, we will refer to each in succession, proceeding from below upwards.

1. Plutonic Rocks.—This division includes only a part of the rocks which are supposed to be of igneous origin. The different varieties of granite, and a few porphyries are found to constitute the more solid foundation on which all the other formations seem to repose. Granite is massive in form, and presents a rough crystaline texture when fractured; it is not divisible into layers or strata, and it shows the appearances of a mass which has cooled from a state of fusion, under circumstances of great pressure, and entire occlusion from the atmosphere. It seems not to have been erupted or ejected through fissures in other formations so as to have carried with it and cemented small fragments of these, as we find in the breccias of volcanic origin. Though often found filling chasms in other rocks, and effecting changes upon them similar to the changes effected by volcanic action, it seems no where to present the appearance of having been elevated by a violent or turbulent expansive force.

2. The Metamorphic Rocks.—This division embraces the lower stratified rocks, and is subdivided into the gneiss mica slate, primary limestone, tolcose slate, hornblende slate, quarts rock and clay slate. Several members of this formation, like granite, are crystaline in their texture, but present planes of stratification, which show that they were formed under different circumstances. It is supposed that they were deposited in the more ancient seas, and having undergone fusion, subsequently, under the weight of the superincumbent waters, assumed their slaty or schistous character, and their crystaline structure. This view is rendered extremely plausible, if not certain, from the fact that such transforma-

tions have been discovered where the lava of volcanoes have come in contact with argillaceous and calcareous rocks of more recent formation, and that modern chemistry has effected precisely similar transformations on the same materials.

In classifying rocks according to their origin, it is evident that these metamorphic rocks belong properly to the aqueous or sedimentary division, though the circumstances attending their formation were somewhat different from that comparative state of quietude which accompanied the deposition of the fossiliferous strata found reposing upon them. That the surface of the granite on which they rest was subject to greater disturbances may be inferred from their more frequent intercalation than the fossiliferous rocks, while the agency of heat may be traced, not less in their crystaline structure, than in the manner in which they have sometimes been bent, or contorted, and folded upon themselves.

3. Stratified Fossiliferous Rocks (*the aqueous rock of Mr. Lyell.*)—As indicated by its name, this great division of rocks embraces all the formations which contain the remains of animals or plants embedded in their substance; and, consequently, includes the transition secondary and tertiary formations of the improved Wernerian system, or the Silurian, Devonian, Carboniferous, Permian, Triassic, or new red sandstone, Lias, Oolitic, Wealden and Tertiary groups of more modern classifications, which we have adopted, as being at present most generally received. The formations constituting this extensive division, differ in some respects from the plutonic and the metamorphic rocks—and their transition or gradual change from the metamorphic to a well characterized fossiliferous state is often obscure. The entire series is formed of argillaceous calcareous and arenenaceous strata, often several thousand feet thick, presenting a compact and earthy structure, but seldom any evidences of having been regularly crystalized. These strata are often divisible into layers or beds commonly called shales or schists, which are not so thin and compact in the upper as in the lower series. The inferior group in this division embraces the lower Silurian rocks; these are stratified, and present the evidences of having been deposited at a period characterized by a state of greater tranquility than that of the metamorphic rocks. Interculations, however, are observed here, which prove that revolutions formerly so frequent in the metamorphic rocks, became less frequent in their occurrence. It is in the lower strata of this formation that the first remains of organic life have been discovered.

A few fucoids polyparia and brachiopida are found in the lower beds of the Cambrian or lower Silurian. As we ascend in the series of formations, these remains of a former world increase in number, and offer us many new genera and species. Fishes, the first family of vertebrated animals, appear for the first time in the upper Silurian, and receive their full development in the Devonian or old red sandstone formation. These types, so profusely multiplied in the Silurian and Devonian, undergo an almost entire extinction in the Permian and Triassic series, and give place to new genera and species. It is in the Permian that we first find the remains of the Thecodont and other Saurians, (huge vertebrated an-

imals) partaking of the nature of both fishes and reptiles, which receive their greatest development in the lias. The foot prints of birds are found for the first time in the Triassic or upper new red sandstone.

In the lower Oolite two mammiferous quadrupeds, of the marsupial or opossum tribe are found, as the first and only representatives of this class now so extensive. Above the cretaceous or chalk in the Paris Basin, Anaplotheroid and other races make their appearance, become extinct and give place to the Mastodon, the Elephant, the Megalonix and others, which are found in the alluvial deposits on the surface. Among all these remains no traces of man or his works have been found, in a fossilized state, in any formation which is not evidently cotemporaneous.

From this it will be perceived that in the types of animal life, the creation has been successive from the less to the more perfect forms of organization. The same may said of the vegetable world. The cellular or agamic were succeeded by the endogenous; and these by the eogengenous, or phenogamous families, which at present clothe and beautify the surface of the earth. It appears, then, that the types of the organized forms found in a fossilized state, have been preserved till the present time, but the genera and species have, in most instances, been destroyed by the revolutions which have marked the past history of the earth.

We have given greater extension to this notice of the fossiliferous rocks, because two of its groups, the Carboniferous and Silurian occupy so prominent a place in the geology of the west. The Silurian system is well displayed, and attains its greatest power in the State of New York. Many of its strata thin out in proceeding towards the west, where the carboniferous (not found in the State just mentioned,) attains its greatest development. In the subjoined table, we have endeavored to present at a glance, the equivalency, or the parallelism of the formations of Europe, with those of New York and the Western States.

It yet remains to notice one more division, or class of rocks:

4. Volcanic Rocks, embracing basalt, trachyte, diorite, and other igneous rocks, are of limited extent, when compared with the fossiliferous strata to which we have referred. They are found principally in the vicinity of active or extinct volcanoes in many parts of the world. Though of igneous origin, they differ from Plutonic Rocks in being often formed of breccias and tufas, and in presenting a less crystaline and a more porous or vessicular structure. They occasionally penetrate and fill up fissures and chasms in the Plutonic and Metamorphic Rocks, and then constitute what are termed *dykes*. Sometimes they are found intervening between fossiliferous strata, but most frequently penetrating all the other formations in the earth's crust, capping or over-spreading them at the surface.

The peculiarities in the structure of some volcanic rocks, are not only sufficient to distinguish them from those belonging to the plutonic, but prove that though identical in their igneous origin, the circumstances which prevailed at the period of their formation were essentially different. The granites seem to have been formed under great pressure, excluded from the influence of the atmosphere and

cooled so slowly as more definitely to assume a crystalize structure. Volcanic rocks, on the contrary, appear to have been formed near the surface exposed to the action of the air, and to have cooled rapidly, and crystalized imperfectly. That they were formed under moderate pressure, is obvious from their want of compactness manifested in their vesicular and porous texture.

We have thus attempted to present a condensed view of the nature of the formations which constitute these four clases of rocks. In this arrangement we have preferred a classification of them according to their origin, rather than their relative ages.

The relative ages of the plutonic, metamorphic and volcanic rocks cannot be properly determined; but the fossiliferous strata are not liable to the same objection, and we have availed ourselves in the following table of the distinctions according to the priority established among them by European and American Geologists:

## TABLE OF GEOLOGICAL EQUIVALENTS OF THE EUROPEAN, NEW YORK AND WESTERN FORMATIONS.

| | Principal Groups. | European Equivalents. | New York System. | Equivalents of Western States. |
|---|---|---|---|---|
| 3 *Fossiliferous Rocks.* | Alluvium. | | | |
| | Drift. | | | |
| | Tertiary. | | | |
| | Chalk. | | | |
| | Wealden. | | | |
| | Oolite. | | | |
| | Lias. | | | |
| | Triassic. | | | |
| | Permian. | | | |
| | Carboniferous. | Coal of England. | | 3 Sandstone schists & bituminous lime-[stone. |
| | | Carboniferous of England. | | 2 Carboniferous or mountain limestone. |
| | | Yellow sandstones of Ireland. | | 1 Waverly sandstones. |
| | | Old red sandstone of Scotland & Wales. | 28. Sandstones and schists, Old red sandstone. | |

| | | | | |
|---|---|---|---|---|
| 3 *Fossiliferous Rocks.* | Devonian. | Eifel and Devonshire Rocks. | 27. Chemung group.<br>26. Portage group.<br>25. Genessee slate.<br>24. Tully limestone.<br>23. Hamilton group.<br>22. Marcellus slate.<br>21. Carniferous limestone.<br>20. Onondaga limestone.<br>19. Schoharie grit.<br>18. Cauda galli grit.<br>17. Oriskany sandstone. | Black bituminous shale, Louisville.<br>Limestone with shells, Louisville.<br>Limestones with coral, Falls of Ohio.<br>Sandstone Indiana. |
| | Upper Silurian. | Ludlow Rocks.<br>Limestones and shales of Wenlock.<br>Upper Carodoc of England. | 16. Upper pentamerus limestone.<br>15. Delthyris shaly limestone.<br>14. Pentamerus limestone.<br>13. Water lime.<br>12. Onondaga salt group.<br>11. Niagara group.<br>10. Clinton group. | Salt group of Ohio.<br>Cliff or Silicious Magnesian limestone. |
| | Lower Silurian. | Schists in Sweden over red limestone.<br>Bituminous schists & limestones of Sweden<br>Inferior sandstones of Sweden, &c. | 9. Medina sandstone.<br>8. Oneida conglomerate.<br>7. Gray sandstone.<br>6. Hudson River group.<br>5. Utica slate.<br>4. Trenton limestone.<br>3. Black River limestone.<br>2. Silicious limestone.<br>1. Potsdam sandstone. | Blue limestone, Cincinnati.<br>Compact limestone. |
| Metamorphic. | | | | |
| Plutonic. | | | | |

## ART. II.—ON THE NATURAL ADVANTAGES FOR MANUFACTURING ON THE OHIO RIVER.

"THE natural elements of a manufacturing district are these:

1. Power—cheap, ample, and certain.
2. Cheap living.
3. Facilities of transporting man and matter.
4. Proximity to the materials to be manufactured.
5. Nearness of the market to be supplied.
6. An healthy position and a climate so equable and temperate that man may sustain continuous labor, even in partial confinement.
7. A good site for buildings and near suitable building materials. Let us examine these in their order.

"1. POWER.—There is now scarcely any handicraft work, from the simplest to the most complicated, which is not materially aided by machinery. Hands seem to be merely required to set that machinery in motion and to direct its movements. So wonderful are the inventions of this century, that we dare not state the ratio of decrease of human labor in any branch of manufactures. A few years since we supposed that the cotton spindles and looms were perfect, or nearly so; yet, within four or five years, a few simple improvements have been made that have reduced the number of hands in a cotton mill more than one half; and it is now said that much of the cotton machinery in England and New England is scarcely worth having.

"The effect of these improvements is to make cheap power more important than cheap labor.

"It cannot be necessary to adduce many reasons why manufacturing should be carried on where the power is found; water power of course is stationary; and, where steam is the motive power, it is generally far cheaper to move the raw material than the coal. For example: 1,000 tons of coal are required in the manufactory for 600 tons of cotton, and from three to five tons of coal for one of iron. Certainly there are exceptions to the rule; it is cheaper to transport coal from Nova Scotia and Pennsylvania to New England, than to pay the aggregate freight on the cotton, dry goods, and provisions to and from the bleak coasts of Sidney and Pictou, or the barren hills around Frostburg and Pottsville. Perhaps this exception will be but temporary.

"All the manufacturing towns of England are in the vicinity of coal-fields. Even the woolen mills of Sussex and Essex have yielded in competition with those of the coal districts.

"When the two are to be combined, the tendency of the bulky is to draw the heavy article to it; and the more valuable the material the better it will bear transportation.

"The copper and tin ores of Cornwall are taken to the Welsh coal fields to be smelted; so also have been the copper ores of Cuba and Lake Superior. The

coal at Pittsburg has drawn to it the lead of Illinois and the iron of the Juniata, of Ohio, and Kentucky, and even of Tennessee and Missouri.

"The same rules are applicable to the next element—cheap living.

"The coal of England attracted our cotton; but, although South Wales was nearer than Lancaster, Manchester became the seat of cotton manufactures, because, besides being in a coal district, it was the centre of a rich agricultural country. The same causes placed Sheffield, Birmingham, and Leeds where they are, instead of on the Tyne, or the Wear. The Staffordshire potteries are over the beds of coal and clay.

"While colonies, we were (as Canada is now) compelled, by direct or indirect legislation, to wear English goods; and for half a century after the revolution had emancipated us from this *quasi* necessity, the English artisan was (practically) confined within prison limits; he was not permitted to emigrate, and he could not send plans, models, or machinery abroad.

"Slater, the father of the cotton manufacture in America, could not (so closely was he watched at the custom-house) even smuggle over a single drawing or pattern. He had, however, acquired a full knowledge of the Arkwright principle of spinning, and, from recollection and with his own hands, made *three* cards and seventy-two spindles, and put them in motion in the building of a clothier, by the water wheel of an old fulling mill.

"Let him who doubts the practicability of manufacturing here, look at this humble beginning and take courage. This pioneer, with very slender means and with few friends, surmounted every difficulty, amassed a fortune, and lived to see New England a manufacturing rival of England.

"Although we have coal at home and at from one-half to one-sixth of its cost in Lancaster or Massachusetts, the most of our cotton and no small part of our hemp and wool is sent from three to six thousand miles to be manufactured; and then our flour and corn and pork are sent in the same direction to make up the deficiency of food among the manufacturers.

"It is not very strange that this state of facts *has* existed, but it will be passing strange if it continue to exist much longer. It will not even require another year of famine abroad to show clearly and *practically* that it is far cheaper to transport the spinner, the weaver, and the machinist to our coal, corn, and cotton, than to pay one freight on the corn, and two on the cotton.

"The third, fourth, and fifth elements of a manufacturing district are *facilities of moving man and matter, and proximity to the raw material and to the market.* These are resolved into cost of transportation.

"General impressions on this point are very erroneous; and, as the result of my statistics may far exceed the belief of those who have not investigated the subject, I give the facts for the full examination of all who feel an interest in them.

"In these articles I refer specially to the cost of manufacturing and vending

cotton goods because this branch of manufacturing is of more importance and better understood than any other.

"Some years since a pamphlet was published in England, by Mr. Graham, on 'The Impolicy of the Tax on Cotton Wool.' In this is an affidavit of Mr. Gemmell, of Glasgow, who states, 'that, although he was for several years in the habit of supplying Chili with cotton domestics, he has latterly been obliged to abandon the trade in consequence of being unable to compete with the manufacturers of the United States.'

"Chili is a market equi-distant from the two competitors for her trade. What gave New England such an advantage over cheap labor, cheap coal, and cheap capital of England? The difference in the cost of transportation on the raw material.

"In 1839–'40, Montgomery gives this estimate of the cost of importation of cotton to the British manufacturer, the first cost of the cotton being 14 cents per pound.

| | |
|---|---|
| Charges on shipment | 4 per cent. |
| Freight and insurance | 12½ " |
| Importer's profit | 5 " |
| Inland carriage | 1½ " |
| Duty | 4½ " |
| Total average | 27½ " |

"While the average cost to the New England manufacturer is stated at 11 per cent.

"The estimate of the actual charges of manufacturing in the two countries gives an average of six mills per yard against us; yet, taking both charges into the estimate, the net advantage was three per cent. in our favor; and besides this, our goods were the best.

"Since 1840, the British Government has been obliged to take off the duty, but it could not lessen the cost of labor, of power, or capital. The wages of the operative then were barely enough to support life; the cost of coal must increase as the seams nearest the surface are exhausted, and it is doubtful whether the capital then invested in the cotton mill was paying any interest.

"The changes that have since occurred on this side of the water have all been in our favor; that is so far as the cost of manufacturing is concerned. More experience has given us greater skill; we have more system and more economy; new facilities of intercommunication have brought our producers and manufacturers of cotton nearer to each other and lessened the cost of their mutual exchanges; but, more than all, the cost of labor, in which England had so much the advantage, has been lessened over one-half; that is, less than one-half is now required. Besides, of late years, the supply of cotton has been so near the demand that the price has fallen from fourteen cents per pound to an average of nine or eight cents; as the cost is reduced our relative advantage is increased.

"From these facts we have this *corollary*; that, *as the cost of labor, power, and material is reduced, the cost of transportation rises in importance.*

"If England cannot profitably compete with us in the Chili market, certainly she cannot compete with us here: for the width of the Atlantic gives us a protection, directly or indirectly, of at least fifteen per cent. *ad valorem.*

"In point of fact, just as fast as the American manufacturer is able to supply the home demand in any article, the English manufacturer is driven from our market, unless, to raise money or to break down a rival, he is prepared to sell at less than cost. It is to be hoped that the wages of labor in this country will never be so low that we can compete with China in embroidered shawls or ivory trinkets; or with France and Germany in tapestry or laces made by hand. In such fabrics the cost of transportation bears but a slight proportion to the cost of labor.

"It is clear then that England cannot sell coarse, heavy, and cheap goods in this valley in competition with our own manufacturer. Let us see if New England can.

"In 1821, as I am told, the first mill for spinning cotton yarn on an extensive scale was established on the Ohio. Now, who sees in our stores a hank of English or Eastern cotton yarn? The same cause that has produced this result—that is, the cost of transportation—must, in a few years, build up all the mills we need to supply us with 'domestics.'

"To see what the precise inducements are to start such a mill here, I give the following details of the cost of transporting cotton from its point of production to us and to the New England mill, and of the goods from the mill to us. It is clear that the difference in the first and the amount of the last give the sum of our advantages in this item, at least to the extent of our home market.

"I base my estimates on a mill of 10,000 spindles for convenience, and because that is near the most economical size. It will be borne in mind that the calculation includes machinery for preparing the cotton and weaving the goods.

"At almost any point on the Ohio river the cost of building is less than Massachusetts. We have stone, lime, clay, and generally lumber on or near the spot. There the lumber and lime is brought from Maine; but few positions furnish good clay for brick; and granite is not so easily worked as our lime or sandstone. The moment there is a demand for it, machinery can be made here twenty per cent. cheaper than at the East. The cost now would be nearly this:

| | |
|---|---|
| The factory building of brick or square stone ruble | $30,000 |
| House for superintendent | 3,000 |
| Twelve boarding houses for 225 operatives | 10,000 |
| Warehouse and store | 2,500 |
| Engine, gearing, and pipes for heating mill, put up | 8,000 |
| Machinery at $12 per spindle | 120,000 |

Here a working capital, sufficiently large to lay in a stock of cotton for five months, is - - - - - - - - - - - - - - - 46,500

Capital stock - - - - - - - - - - - - - - - - - - - $220,000

"This estimate is larger by $20,000 to $30,000 than that made by persons who have far more practical knowledge on the subject than I have.

"The longer the material and its product are *in transitu*, or, in other words, the further the manufactory is from the raw material and the market, the larger must be the working capital; and the interest on the difference is fairly a part of the cost of transportation. And besides, as England and New England are obliged to enter the cotton market once a year, and at the same time, and at the very time when our other great staples are ready for shipment, prices and freights are then generally at their highest rates; sometimes, as we have seen, sufficient means of transportation cannot be had at all; to guard against this contingency, as well as the fluctuations of price, many mills keep a heavy surplus stock. We can command the market at all times, we are always ready to contract, and can select our own time to receive the cotton. We are here also at the point of consumption, we cannot for years supply the home demand, and our goods will be taken as fast as they are made.

"With these facts in view, it is very safe to say that the New England mill requires a working capital of $100,000 more than ours; but, to be altogether within the mark, put it at $50,000; the interest on this is the first item of saving or advantage to be carried out—say per annum $3,000. As we can turn over our capital more than once a year, and its earnings at each time will exceed six per cent., we might with propriety make the item much larger.

"At Lowell there are forty-five mills containing 253,456 spindles, and with a capital of $11,490,000, or over $450,000 for every 10,000 spindles. If $50,000 is deducted for capital required to purchase the power, $50,000 more to cover the difference in communicating the power and the additional cost of buildings, the working capital would seem to be $130,000 over that required here by my estimate. But I am not advised as to how much of this capital is required to enable the mill to sell on credit, or whether the surplus fund, usually laid aside out of profits, is sufficient for this purpose. The Lowell corporations rarely publish the amount of their reserved funds, or even of their profits unless when they are remarkably low.

"The mill in question will turn out, on the average, two tons of goods a day—say 600 tons per annum. The English estimate of waste and loss is one-sixth; our rule gives eighty-nine pounds of goods for 100 pounds of cotton; by this the mill will require 666 tons of cotton per annum.

"The following estimate of the cost of bringing dry goods to Louisville from Boston, *via* New Orleans, was obtained from one of our largest dry goods houses, and I feel confident that the rates are below the average:

| | |
|---|---|
| Boston wharfage per bale | 02½ |
| Freight to New Orleans per bale | 45 |
| Charges at New Orleans per bale | 30 |
| Insurance, 2 per cent. on $60, or on cost and 10 per cent. added | 1 32 |
| Interest *in transitu* 40 days | 40 |
| Exchange half per cent | 30 |
| Freight to Louisville | 62½ |
| | $3 42 |
| Add average cost on the bale from the mill to and at Boston, at least | 40 |
| | $3 82 |

"The bale, of 4-8 brown cotton, of 750 yards, average cost $60; 3 yards to the pound. This gives over half a cent to the yard, one and a half cent to the pound, and $30 per ton.

"There are, however but few houses that ship by New Orleans, and at times when freights are low; altogether the largest portion of brown cottons and prints brought to the central West come from the Eastern agent or jobber and by the lakes or across the mountains.

"This is the *ordinary* course of trade, and there is no reason why we should not base our estimates on what is usually done, if the same system is likely to continue.

"By these last routes, as every dry goods merchant (wholesale) can satisfy himself by reference to his books, the average freights from the Eastern cities is from two-thirds to three-fourths of one cent per yard. If to this is added the coastwise freight, insurance, interest, profit of the jobber or commission of the second agent, the cost will swell up to, at least, one cent per yard, three cents per pound, or $60 per ton.

"But, as I have often been told, the agent at Baltimore will sell domestics just as low as they can be had at Boston or Lowell, and the Philadelphia jobber will often sell lower to draw in customers, as he relies for his profits on other goods. All very true; but a moment's reflection will satisfy any man of the fallacy of this reasoning. The manufacturer may wish to get rid of his surplus, and find it his interest to pay the transportation to, and the commission of an agent in a remote market, but this does not lessen the actual cost of the transportation or agency. The jobber may entice a customer into his store by selling silver at fifty cents an ounce, but this does not prove that the ounce of silver is actually worth less than a dollar. The same kind of argument is often applied to cost of transportation on our river. The Peytona will ask $5 from a passenger to Louisville who calls her in at Brandenburg, and the price would be the same if he got in at

Cairo; yet the writer on the Western carrying trade would be laughed at were he to state that the cost of transportation from Cairo and Brandenburg, to Louisville was the same. Coal often sells for a less price at St. Petersburg than at Newcastle; yet no one has attempted to show that the shipment of coal a thousand miles lessens its cost, or that St. Petersburg is the proper site of manufactures, because coal was sold there at a particular day cheaper than at the English coal mines. The balance sheet of every business must show the profits or losses in each of its branches. The high prices demanded by the larger boats for way-passengers and freight have introduced the river packets, and the extra costs paid by the Eastern manufacturer are now building up the Western mills.

"To return to the figures: the mill given will consume 666 tons of cotton per annum.

"Freight from the cotton districts of Nashville, Florence, Tuscumbia, and points on the Mississippi river in Tennessee and Arkansas, and on the Arkansas river, are about the same to Louisville as to New Orleans. As the river packets multiply, the rates in this direction will probably be lower. Besides, as our agricultural exports increase, the return boats will run light and charge less. Our mill, then, will save the charges on the cotton at New Orleans and the cost between that city and the New England mill. I have not access to a series of New Orleans prices current, but I presume the following estimate will not be wide of the mark:

| | |
|---|---|
| Drayage, storage, brokerage, and commission of agent or merchant at New Orleans per bale of 450 pounds | $1 00 |
| Insurance on $36, or 8 cents per pound | 50 |
| Freight ½ cent per pound | 3 38 |
| Interest, forty-five days | 27 |
| | $5 15 |
| Or 1 14-100 cent per pound, or per ton | 22 00 |
| Add charges in Boston | 10 |
| Average freight to the mill | 2 70 |
| Total per ton | $24 80 |
| 666 tons required at $24 80 gives | $17,182 80 |
| Add saving in interest of capital per annum | 3,000 00 |
| Add minimum freight on goods or $30 per ton on 600 tons | 18,000 00 |
| *Minimum* advantage | $38,182 80 |

"But if we add the ordinary freight on the goods, or $60 per ton, we have

the *maximum* advantage of $56,182 80, or an average of $47,182 80 on a capital of $220,000, or near 21 1-2 per cent. per annum. I might add from 1 to 2 per cent. loss on exchange, as the agents of the largest mills usually sell bills at 60 days, and at a discount of from 2 to 3 per cent. to pay for the cotton they purchase at New-Orleans.

"Besides, a large amount of cotton manufactured at the East pays a second profit and the costs of a second transportation.

"As I have not access to the exchange accounts of the Kentucky banks, (whose agents invest largely in these bills) or to the books of the New York cotton speculator, or of the Sound steamboats, I cannot make an average of these items of cost, and omit them in the foregoing calculation.

"I say nothing here of the great saving in fuel and in food; to these points and to giving an aggregate of advantages I propose to devote another paper.

"I believe the foregoing estimates are within the truth, and that I have not been able to get at all the items of cost; indeed many of these are of such a character that they cannot well be specified; such, for instance, as the expenses and time of the merchant who goes abroad to make his purchases; occasional loss and delays in receiving goods for which insurance offices and transportation lines cannot be made liable; and all the contingencies to which a trade between distant points is subject.

"It will be noticed that nothing is said here of disadvantages; there are some, and I will endeavor hereafter to state them fairly, and then perhaps you will be surprised to see how few there are and how easily these can be surmounted.

"I have been furnished with the following estimate, which nearly corresponds with the foregoing, and from a source perhaps more reliable than any other in New England. The comparison is between Massachusetts and Pittsburg:

"A mill of 10,000 spindles will turn out 4,000,000 yards of number fourteen sheetings or shirtings and consume 1,400,000 pounds of cotton in one year. The difference in the cost of the raw material and the cost of sending the manufactured goods to the West, including interest, is, as near as can be estimated, *one cent per yard*, or, $40,000 in one year's work.

"If there is but even fifteen per cent. advantage (and I challenge the production of *facts* to show that there is not twenty-five per cent.) in this single item of cost of transportation, how long before our men of capital, who at most, can get ten or twelve per cent. interest on moneyed loans, will engage in manufacturing? It needs but the establishment of a single mill on the Lowell system, and the making of a single dividend, to draw the attention of every man among us who has spare funds sufficient to buy a share of stock.

"The sixth element of a manufacturing district is *a healthy position, and a climate so equable and temperate that man may sustain continuous exertion even in partial confinement.*

"Such is and ever will be the competition in manufacturing, that the mere

operative can expect only a slight advance in wages over the agriculturist. The latter is usually the owner of the soil he tills; he bears exposure willingly for the increased value of his farm obtained by that exposure. He drains the morass, despite of its noxious effluvia, with the prospect of rich harvests on the same site; but the former stipulates for and only receives a stated pay and with no expectation of an advance; to be sure, the 'factory girl' works by the piece, but she knows, before entering the mill, how many pieces she can turn out. Besides, when the ploughman is sick, his place can readily be supplied; but the sickness of the engineer may stop the work of hundreds, and a large capital may lie idle while a substitute is sought for.

"I refer specially to large manufacturing establishments, carried on by associated capital, and under the organization of directors, superintendents, and overseers, of whom the active managers are men of character, and generally men of family, who prefer a liberal and certain income, to the uncertainties of trade or of the learned professions — men who would not for a limited salary risk the climate of Singapore or Spitsbergen.

"Indeed the reasons are too obvious for enumeration why such labor can only be obtained and rendered productive in the temperate zone, and there never was and never will be a manufacturing town at any other than a perfectly healthy position — not even in those countries where labor is constantly pressing for employment. Even after a place (this city for example) has become healthy, it requires years to remove unfavorable prejudices.

"On this river, at least as far down as the lowlands at the confluence of its western tributaries, there are as few permanent causes of disease as exist in any other part of the world; the causes of malaria will soon be entirely removed by the cultivation of its banks, and the constant agitation of its surface by boats; and in a few years bilious fevers will be as rare here as at the east, while we are comparatively exempt from that scourge of the northeastern seaboard, the consumption. There, as experience has shown, the piercing winds, coming unobstructed from the icebergs of the Arctic ocean, bring death to those coming out of the heated rooms of a city or manufactory; but the cold air of the lakes and the mountains is tempered before it reaches us.

Our coal districts are proverbially healthy. Coal smoke is by many believed to be one of the best disinfecting agents, and the usual epidemics of the country have become less fatal when the use of coal has become common; perhaps this is one of the causes why the centers of our cities are always regarded as more healthy than the suburbs.

"The eighth element is *a convenient site, and near suitable building materials.*

"It would astonish one who has never thought of the subject, to calculate the amount of fixed capital expended in grading an uneven site of a city, and in its buildings. The filling up of our ponds and cutting down of our sand hills has been but a mere trifle, when compared with similar expenditures in other cities.

"The splendid Quincy market-house in Boston, and the immense blocks of granite warehouses around it, now stand where ships once anchored; millions of dollars have been paid by New York for the timber and lime of Maine, the granite of Massachusetts, the sandstone of Connecticut and New Jersey—and she has even been obliged to send to New Hampshire and Maryland for brick.

"The very cost of transportation on the building materials, already sent to New Orleans from New England and the Ohio river, would, at many points on this river, build a large manufacturing town, and furnish it with a working capital.

"At our coal fields on the Ohio are the best of building materials—common clay, fire clay, fire stone, and lime stone are on the spot or in the immediate vicinity; while, underlying the coal, is a stratum of sandstone with a single stratification which splits readily, is soft in the quarry and hardens on exposure to the atmosphere. This is now being taken for the construction of the public works at Memphis, and is pronounced equal in durability to the same character of stone used in the construction of Trinity Church, New York, while it is cut more readily.

"Here, then, on the banks of the Ohio and its tributaries, we have *all* the *natural* elements of a manufacturing district: cheap fuel, cheap living, cheap land, cheap stone, clay, and timber, cheap raw materials, cheap transportation, in a healthy country, in the centre of a great market; and, besides, we have good laws and light taxes.

"Where else, in the wide world, are all these advantages found in combination?

"The *artificial* elements of a manufacturing district are *capital; labor and skill* in all the departments depending on each other; *reputation*, or, as it is sometimes termed, good will; and *a condition of society and code of laws adapted to the permanent employment of labor and capital in manufacturing.*

"First, of CAPITAL. There are three distinct epochs in the history of manufactures—

"The *first* is typified by the Arab of the desert with his warp stretched from pegs stuck in the sand, and by the early emigrant at her wheel or loom. The manufacturer here has grown the material and will wear the product.

"The *second* is where one or more unite capital and skill, under some form or other of copartnership, to manufacture what others have grown and others will consume.

"In the west we have reached this stage which (in this country at least) will not admit of a great extension; because partners often disagree, and at the dissolution of the partnership by death or otherwise, the concern has to be re-organized; and because the father is rarely sure that his son will have similar taste or skill to employ capital advantageously in the mill.

"In Europe, society is much divided into castes, and the son is trained up to follow the calling of his father. In France we see the same brand on the wine

cask that was noted a century ago; so in England, the sign of a shop often occupies its place without change through several generations. In such a state of society, joint or family interests may be sufficiently strong to give permanency or profit to a manufactory requiring a large outlay of fixed capital.

"This system was tried at the east and was soon abandoned as unsuitable to our people and institutions, and as soon as it was evident that the business of spinning and weaving cotton could be made permanent and profitable, the shrewd and calculating New Englanders passed to the *third*, or golden age, in manufacturing; and it is to the well considered system of Lowell and his associates, and the working plans drafted by them, that New England is now indebted for her eminent success, and the largest part of her present wealth and importance.

"That system is *the association of capital, protected by liberal charters, and under the management of superintendents of high character, overseers carefully selected, and directors in whom the public have entire confidence.*

"This system, which has worked so well elsewhere, is worthy of our adoption; wherever it has been tried the results have been the same; it has stood the test of a quarter of a century, and it does not require the gift of prophecy to predict the same result here.

"It is admirably adapted to our institutions and the character of our people. It is the *democratic* system, for by it, the hundred dollars of the poor man, invested in the stock of the corporation, draws as large a dividend as the hundred dollars of the rich man; it is the system *safe* for the public, for it requires at the outset a capital sufficient for its purposes and asks no credit; and safe for the stockholder, as he only risks his stock and cannot well be ruined by the mismanagement or knavery of associates; this is the system which gives surety to the operative for his wages and to the agriculturist for the price of the food furnished by him to the operative; and the results of its adoption here will be seen in lessening the cost of fabrics our necessities require—in increasing the amount of our productive capital—in enlarging the number of profitable employments of our young men of capital and enterprise, and in giving us an important home market for our raw materials and provisions.

"The way in which this system works, and *why* it works well, will be seen hereafter; but under it, as perhaps every reflecting man will admit, the west has already abundance of capital for the purpose. It is not expected that our very rich men will leave their comfortable homes for new positions where there are peculiar natural advantages and where manufacturing can be made most profitable; or that they will personally superintend the details of making cotton or any other fabrics; nor can it be expected that they will risk the earnings of years to the management of a distant co-partner or agent.

"To manufacture cotton, or indeed any other great staple, at the most profit, we must do a large business; the cotton mill of 10,000 spindles will make goods probably ten per cent. cheaper than one of 1,000 spindles; the first requires a

capital of, say $200,000; now, it would be preposterous to make the attempt to get a Lexington capitalist to furnish that large sum of money to any man or for any purpose, however great the "paper profits" might appear, or however strong might be the faith of the capitalist in the general profits in the business proposed: it would be equally preposterous to ask two hundred men to contribute $1,000 each, and also their individual skill and labor, to any copartnership concern. But, if you start twenty mills under the guardianship of the same men who so satisfactorily manage our bank and insurance capital, and under the direct superintendence of a man of unquestionable capacity and integrity, and with the checks of treasurer, overseers, &c., where there is no liability beyond the capital invested, and where the stock promises large dividends, you will find the rich man taking his risks in each mill; while the man of less capital will follow the example to the extent of his means. They who construct the buildings or furnish the materials and machinery, and they who wish to sell the goods or obtain employment in or about the mill, will be glad to take all the stock they can afford to hold. Labor and materials to a considerable extent will be equal to money.

"It is said that steam boat capital does not, on the average, pay eight per cent. per annum — yet how easy is it, on any point of our river, to start a boat costing from thirty to fifty thousand dollars — in this the shares are rarely over 1-16 — but in a cotton mill each share would be, say 1-2000. The boat owners are the builders of the hull and engine, the officers and the commission merchant; would it not be far easier to raise the capital of the mill and partially in the same way, with anticipated profits of twenty to forty per cent., and in a business attended with less risk and giving constant employment, and at the same place? Let those who scorn small contributions to great works remember that most glorious of all monuments, the Polish mound, made by a grateful people, of whom each contributed but a spadeful of earth — or the more recent instance of the subscription of half a million of dollars by Irish laborers, which ensured the completion of the western rail road from Boston to Albany.

"It is believed by many that there has been an increase of specie capital in the Mississippi Valley since 1836, of nearly one hundred million of dollars, and that its annual increase is from ten to fifteen millions. It is said by those who have the best means of knowing the facts, that something like five millions of specie are annually brought into the west by European emigrants. Some shrewd calculators make the exports of Indiana and Illinois over their imports from six to seven millions of dollars per annum. It will be remembered that the Government does not now drain us of specie through its land offices, and that we are now nearly freed from eastern land speculators. Our independence is shown in the strength of our banks and the favorable state of our domestic and foreign exchanges. In the interior, the rate of interest has fallen to six and in some sections to five per cent. per annum; while in our cities and large towns our banks furnish all the facilities desired for legitimate business transactions.

"We have so long been dependant on the east for money capital, that it is difficult for us to look for it in any other direction. We have now sufficient strength to stand erect, but have scarcely learned the use of our feet.

"But, perhaps, we are to look to the south for capital, either in money or its equivalent, cotton. The cotton planter for years has been chagrined that he has made less in producing than the New Englander has in manufacturing the cotton; and he will gladly avail himself of the opportunity, now perhaps first presented to him in a practical shape, of making the manufacturers' profit. He could not manufacture in Glasgow or Manchester; and Lowell was too far distant for him to invest in her mills. At home he has not the labor, power, conveniences or skill. The lower Ohio is within his reach, (I refer to the planters on the Mississippi and its tributaries.) Here he can, while overlooking the management of the mill, mingle business with pleasure during the summer. Many may smile at the idea of getting surplus capital from a cotton planter, and may exclaim, mortgages, execution, advances, &c., yet let me assure such that the southwest is in quite a different condition now from what it was ten years since. Let them remember that not only has the cotton crop vastly increased in that period, but that the facilities for obtaining credits in New Orleans have been greatly diminished, while at home there are now comparatively no such facilities. Many of the planters now consign their crop to Louisville, Cincinnati, Pittsburgh, the eastern cities and even to Liverpool, and neither ask nor wish for an advance. Let it also be remembered that the cotton planter has nothing at home to invest his surplus in, save more land and slaves. He has no canals or railroads, houses, or ships to build; he has no banks to deposit his money in even; he does not wish to take mercantile risks or to leave his money long in the hands of those who do take such risks; would he not gladly invest in mills near him, where his own cotton would be spun and woven, and on its way to market and on his way to the springs or his summer residence? Indeed he might find a healthy summer residence within sight of the mill. He would realize the value of his cotton (indeed trebled in value) from the goods before he could get his returns from that consigned to the Liverpool factor.

"This direct consignment is, of course, the most favorable for the planter. When the New Orleans or New York speculator buys the cotton and consigns it, the planter, of course pays, or rather loses, the intermediate profits.

"On this reliance on the south I have not only to state its reasonableness, but the positive assurances of very many planters who have surplus capital, that they and their friends are ready to take stock in cotton mills just as soon as they who practically understand the details of putting up and managing mills, will obtain the charters and superintendents and contractors.

"But we cannot expect cotton mills to leap into existence at once. Several years will be required to erect buildings, obtain machinery, &c. Then the first that are started will make profits to build others; besides, the moment we show

the east that we have systematically and energetically undertaken to manufacture our cotton and hemp, and to eat our corn and pork at home, the building of new mills there will be checked, and the men of capital and enterprise there, who wish to engage in the business, will bring their capital, skill and labor here.

"It will be seen under the next head what of these requisites we may expect from abroad."

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## ART. III.—THE CHEROKEE ROSE.

The following article, from the pen of THOMAS AFFLECK, of Mississippi, and published in the "Commercial Review," is highly entitled to the consideration of the western farmer. Of the Cherokee Rose, we can say nothing of our own knowledge; nor do we know whether its adaptation to this climate has ever been tested. But from the fact as stated by the writer that it "was not affected" by the severe cold which happened in February, 1835—that being a season of the year when tender plants are most liable to injury from severe frosts—we conclude that it would survive the winters of Missouri. Again, the writer inclines to the opinion that the Cherokee Rose is a native of East Tennessee; if this should be true, it would seem to remove all doubt as to its adaptation at least to the southern part of Missouri and Illinois. If this plant should be found to thrive in the prairies of the west, and should answer the valuable purposes ascribed to it by Mr. Affleck, it is calculated to become a source of incalculable convenience, especially to those of the prairie districts.

Although not intimately connected with the cultivation of this plant, the letter of Mr. Affleck to the Editor of the Commercial Review, contains so many judicious remarks, that we have given it entire, as a proper introduction to the subject.

J. D. B. DE BOW, Esq.:

Treatise after treatise has been written and published upon the waste of timber in the common rail fence, where timber is yet to be had for such a purpose; elaborate estimates made of the yearly cost of such fences, in time, labor and material; and endless suggestions as to the best substitute to be employed in different parts of the country. Some propose dry stone walls—than which there can be no better fence, where the materials exist. Others, descanting upon the beauties of an English landscape, in which the neatly kept hedges of hawthorn occupy so prominent and ornamental a place, propose its introduction here for that purpose, and quote the directions of English authors for propagating and planting it. Some again, aware of this having been repeatedly tried, and without success proportioned to the cost, point out the adaptation of different native hawthorns, the crab-apple, honey-locust, osage orange, &c., to different portions of our extensive and varied country. Then we have ditches and sod walls, and patent wooden fences

of many kinds, for the prairie regions, and, last of all, we have it proposed and earnestly and ably advocated by the editor of the American Agriculturist and his correspondents, to do away with fences entirely, every farmer housing and feeding his stock, or herding them on his pastures.

We have seen the substantial *stone dykes* of Scotland, and others after the same model in the Eastern and Middle States, and in Kentucky; the beautiful hedges of hawthorn, crab-apple, holly, beech, &c., in England and elsewhere; and close copies of these in different parts of this country, reared, planted and kept in order by a great expenditure of labor; excellent hedges of the osage orange in Ohio and in Pennsylvania; the utter failures at fencing in the prairies of the West, with sod walls and ditches; and we have tried our hand at almost all of these, in turn, and at every variety of wooden fence, from the last patent Yankee invention, to the substantial post and rail of cypress. But in no country have we seen a fence of any kind so admirably adapted to the climate and existing state of things—so cheaply obtained and easily kept in order—so permanent, efficient and substantial, or more thoroughly tested, than the *Cherokee Rose hedge*. Many years have elapsed since this plant was first employed for the purpose of fencing in South Carolina and Georgia, and in Adams and Wilkinson counties, Mississippi. Excellent fences of it have there existed for a sufficient length of time to have led to its universal use in the Southern States; yet in many parts of those very districts, though timber has become extremely scarce, hedging is but little thought of—and elsewhere it is almost unknown.

This is by no means a rare instance in the history of Southern Agriculture, and, indeed, of the agriculture of the world. Farmers are proverbially slow in adopting improvements—some from indifference, others from a contempt for theoretical and book-farming—terms freely used when any thing out of the old track is proposed—and not a few from ignorance. It has been truly said, that the apothegm got up in the days of ignorance and maintained by her children ever since—"to plant well is better than to theorize well"—has been "an instrument of more mischief than any two-edged sword," and of incalculable disadvantage to the agriculture of the south. "Modest merit too often shrinks before it. Let it be asserted, and asserted without the fear of contradiction," (says the same writer—J. E. Jenkins, in the *Southern Agriculturist*, vol. 7, p. 174,) "that *theory is the incipiency of all acts;* that the first clod of earth that was ever designedly broken for the introduction of seed with the intention of reaping its production, was the effect of speculation and of mental arrangement. To be able to speculate, proves a scrutinizing faculty; and to theorize to success, the highest mental endowment." He remarks, further: "It is easy for the most ignorant clod-hopper to call himself a planter, and no theorist—as if he thereby conferred upon himself some honorable distinction, whilst he heaped upon the head of his neighbor—whose mind elucidated his practice, and who is not unwilling that the world should share with him whatsoever good he can impart—coals of fire and molten lead."

Strong language this, yet how true! No improvement is proposed, no new thing introduced to the planting world, without meeting with severe checks from self-sufficient ignorance. It is on record that the cultivation of cotton as a staple crop, and those who sought to introduce it, were included in the same sneering remark—"a fit crop for a petty farmer, but not for a planter." *Horizontal plowing and the side-hill ditch or guard-drain*, are most valuable instances of "theorizing to success," and require a mind of but very moderate calibre to comprehend their advantages. Yet the first was adopted slowly, and not until whole States had been almost ruined by the old method of plowing up-and-down hill, and is even now unknown in many districts. The latter—the guard-drain, or side-hill ditch—is as yet a thing unknown of by ninety-nine in a hundred of the hill-planters of the South; or, if attempted, without a correct knowledge of those principles without which incalculable harm, instead of good, is done. Yet this most perfect preventive to the washing away of the surface soil and the formation of gullies, has been known and practised with complete success; and full explanations of the principles upon which they should be laid out, and directions for the work, have been published many years ago. And even plantations nearest to others completely protected in this way from washing, are being washed into gullies, and losing what little soil is left to them, without a judicious effort on the part of the owners to prevent it. And thus it is with many other improvements of equal, or even greater, value.

Much of this might be remedied by means of an ably conducted Southern Journal of Agriculture, through which those farmers willing to impart the benefits of their experience—of their "theorizing to success"—may be induced to do so, sustained by the countenance and support of a well-informed, judicious Editor, against the sneers of folly, or detractions of envy and ignorance.

To you, my dear Sir, we must look for a *South-western Journal of Agriculture*. You have established the Commercial Review upon a permanent footing, and under disadvantages and trials of which no one can form a conception who has not gone through the like—and stand forth the able advocate of the commerce, and incidentally, of the Agriculture of the South. You are giving, each month, increased interest and value, with increased size, to the Review. You already include, as remarked, the subject of Agriculture and Agricultural improvement; so it is doubtful whether another and distinct periodical, devoted solely to that interest, great though it be, could be sustained. Nor would it be good policy to attempt it. Would it not, then, be advisable to appropriate a separate and sufficient space in each month's Review, to Agriculture and the Sciences, and interests immediately connected therewith—thus offering additional inducements to the planting community to sustain the Review, not only by their subscriptions, but by their pens? Be assured it would. Think of it. We have heard the plan suggested, more than once, by the friends of the Review.

The following essay is offered you for the proposed department—or as you may

please — with the hope that it may prove acceptable to you and to your readers.

I am, &c., yours,

THOMAS AFFLECK.

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## "THE CHEROKEE ROSE."

At page 461, of vol. 1, of Terry & Gray's *Flora of North America*, will be found the following description of the plant named as the subject of this article. It is classed amongst the "naturalized species."

"*Rosa lævegata* — (Michx.): very glabrous; branches armed with very strong, often geminate curved prickles; leaves three-(sometimes five-) foliate; leaflets cariaceous, shiring, sharply serrate; stipules setaceous, deciduous; flower, solitary, terminal; tube of the calyx ovoid, muricate with long, prickly bristles. Stem with long flexible branches, capable of being trained to a great length. Flowers very large, white. * * * * * * * * * * *

Thus far for the Botanist. To the Farmer we will offer a more easily understood description.

But first as to the FOREIGN ORIGIN of this valuable plant. Messrs. Torrey & Gray, who are high authority, speak positively on this point. Prince, in his Catalogue of Roses, states it to be a native of Persia, but does not give his authority. Its appearance and habits are foreign; yet we would gladly identify it as a native, and think it quite probable that it is so — and offer the following statements in support of that opinion:

The December (1831) number of the 4th volume of the Southern Agriculturist, (Charleston, S. C.,— a most valuable journal, now, alas! no more) contains one of the (previously) unpublished manuscripts of the late Stephen Elliott, "upon the culture of the Cherokee or nondescript Rose as a hedging plant," in which occurs the following passage:

"The history of this plant is obscure. It was cultivated before the Revolution by the late Nathaniel Hall, Esq., at his plantation, near Savannah river, and having been obtained from thence and propagated as an ornamental plant, in the garden of Mr. Telfair, and the Messrs. Gibbons' of Sharon of Beach Hill, under the name of the "Cherokee Rose." It is probable that it was originally brought down from our mountains by some of the Indian traders. Mr. Kin, a most indefatigable collector of the plants of the United States, and I believe a very worthy and honest man, assured me that he had found this rose on or near the Cumberland mountains, in Tennessee. Michaux met with it in the gardens in Georgia, and perceiving it was an undescribed plant, he introduced it into the gardens near Charleston, as a nondescript Rose. Hence it has obtained in that neighborhood the popular, but absurd name of "the Nondescript." In Georgia, it has always retained the name of the "Cherokee Rose."

In the second volume of the American Farmer — that pioneer journal, to which with its veteran editor, J. S. Skinner, we are indebted for more than the non-

reading portion of the farmers of the present day have any idea of — at page 118, is a communication signed "Wm. W. Anderson, Statesburg, S. C. June 16, 1820," from which we quote in support of the same opinion: "*This* is a *native* plant, and has been generally called in South Carolina, *nondescript*. It is now more properly known by the name of Cherokee Rose, on account of its being found in the greatest abundance in the tract of country inhabited by the Cherokee Indians."

We have no facts of our own to offer — but think the above views so clear and positive, that they may safely be advanced in support of the *hope* that the Cherokee Rose may prove to be indigenous to the South, and not an exotic.

The *Rosa lævigata* is an evergreen, approaching to a vine in its habit of growth; the leaves are dark green and beautifully glossy, or shining — hence its specific name. Its long and strong shoots are completely covered with stout and very sharp prickles, curved backwards. The wood soon acquires a hardness which prevents its being browsed upon by any kind of stock — though, during a hard winter, cattle and sheep will pick off the leaves, without injury to the plant. The blossoms, which appear very early in the spring, in vast numbers, are large, single, and of a peculiarly clear and pure white. The flexibility of the long shoots allows of their being laid up into any form or position that may be desired; and as they readily take root when layered, weak places in a hedge are quickly and permanently strengthened: and though inclined, if neglected, to run wild, it bears the knife and shears well, and can readily be reduced again to order whenever desired. We have seen hedges of it occupying a space of twenty feet, and from fifteen to eighteen feet high — picturesque objects in the landscape, but bad marks of neat farming.

We would commend this plant for hedging for the following reasons: for beauty, strength, permanency, facility of propagation and culture, freedom from disease and from injury by stock or insects, peculiar adaptation to our climate and wants, and to farms cultivated by negroes, the rapidity with which it forms a perfect and substantial fence, the exemption of such fences from destruction by accidental fires, and the facilities it offers the planter of forming permanent enclosures without exhausting his supply of timber.

Its Beauty.—This may not, by many, be considered an object of very great importance in a hedging plant, still it has its claims to notice and its advantages. As these are self-evident to those with whom arguments in their favor would have any weight, we shall not offer them, but pass on to the mere utilitarian advantages. The plant is, beyond question, a very beautiful one, especially when in bloom, when it forms one mass of snow-white wreaths, relieved by the rich, dark green of the leaves; and hedges of it may be still further improved, as a means of enriching and enlivening the landscape, by introducing plants of the stronger, freer-growing of the Noisettes and of the various running roses, at the distances of thirty or forty feet in the hedge.

For *strength*, a well kept Cherokee hedge, of strong growth far surpasses any

other kind of live fence; and it is a more efficient protection to crops and stock than any other fence known to us. Unlike other hedges, where the stoutness of the stems of those plants of which they are formed, is the main source of strength to the hedge, this one is so bound together by the interlocking of the long shoots, which have been laid down lengthwise of the hedge, at different periods of its growth, as to be utterly impervious to any animal. We have seen a knowing old bull, lowering his head, and *closing his eyes* to the consequences, force his way through the most compact hawthorn hedges of England; but we feel confident that a well-grown hedge of this rose would turn the Buffalo. In a field thus fenced, sheep are perfectly safe from dogs or wolves, unless these enter at the gate; and hogs may be raised even close by such a neighbor as we were at one time favored with, who cursed his negroes for "a set of worthless, sleepy-headed rascals, who could not pick up pork enough o'night, in such a neighborhood, without compelling him to buy it!" The negroes, belonging to a plantation thus enclosed, find it difficult to ramble much, as they cannot cross these hedges without considerable labor and some risk.

Permanency.—We find that plants and hedges now exist in full vigor and thriftiness, of from twenty to fifty years growth, in various parts of South Carolina, Georgia and Mississippi. No instance has come under our notice, during very extended enquiries and not a little personal observation, of any appearance of a want of permanency, or of the plant dying out from any cause. Unsightly gaps and defective places are by no means rare in even a majority of Cherokee hedges; but these are ascribable solely to neglect and indifference. One half the labor and care bestowed upon an equal number of cotton plants, would keep the young hedge in such a vigorous, growing condition as entirely to prevent gaps.

In *facility of propagation and after culture*, the Cherokee Rose equals corn or cotton. But of this, anon.

Of its *freedom from disease and from injury by stock or insects*, we can speak positively thus far. We may expect, however, that as the plant itself is multiplied, its insect enemies will also inevitably increase — not by *spontaneous generation*, however, but by a natural increase from a natural cause.

No degree of cold experienced in South Carolina or Mississippi affects this plant injuriously. The winter of 1834-'5 was a remarkably severe one and particularly destructive to vegetable life. We find it stated, in a very interesting retrospect of that season, as experienced at Charleston, in the 8th vol. of So. Agriculturist, that during "the end of the year 1834, the temperature was moderate and uniform," which "by rousing the vegetable world from its torpor, prepared the way for that devastation and havoc, which spread far and wide." This continued with no very important change. At nine o'clock, on the night of 6th February, 1835, the thermometer stood at forty-eight degrees. At a more advanced period of the night a very severe change took place, producing showers of sleet which fell at short intervals. "The succeeding day the weather moder-

ated, and although cool, the influence of a bright sun rendered the temperature agreeable until towards evening, when old Boreas sent forth a chilling blast from the North-east, approaching to a pretty severe gale, diminished the temperature down to twenty degrees, at nine o'clock, P. M. This was succeeded by Sunday, the eighth." It was the coldest day ever experienced in South Carolina, so far as recorded. "The thermometer stood, after sunrise, five degrees above *Zero*, leaving scarcely any doubt that it must have been at Zero previous to daylight. The salt-water in the docks and mill-ponds in the neighborhood of the city, was frozen." Green-houses afforded no protection to exotics. Fig trees, myrtles, oranges, etc., etc., as far South as St. Augustine, were cut down to the roots and many utterly destroyed. We presume it was at this time that M. Noisette, whose residence and nursery near Charleston had long been celebrated for their beauty, lost his magnificent collection of Camellias, the growth of many years — planted and nursed by his own hand — and unequalled in size and splendor. The old gentleman, in the morning, gazed upon them, all blasted and killed to the ground; and, it is said, re-entered his house without uttering a word, took to his bed and in a few days, died!

The Cherokee Rose was not affected by this sudden and severe change. It will even thrive as far north as Maryland. The late Mr. C. E. Rowand, of South Carolina, aiming at a great public good, actually distributed some hundreds of parcels of cuttings of this plant, about the year 1820 to '23 to an equal number of his fellow farmers in the Southern States; at the same time publishing in the American Farmer directions for its cultivation, etc.; and requesting, as a very moderate return for so much trouble and expense, that the recipients would report their success or failure, through that journal. Some *half dozen* did so! Poor encouragement to others to follow the liberal example of Mr. Rowand. Through those who did report—Am. Farm., vo. 7—we learn that Mr. Wm. H. Tilghman, Plinlimman, Talbot county, and Edward Stabler, Jr., Harewood, Montgomery county, succeeded in growing the plants; of their success we have no knowledge, after the first three years. We are thus particular, to satisfy enquiries that have been made of us from Pennsylvania and Virginia, and we would be glad to learn if the rose still flourishes at these places.

We have much to say upon its *adaptation for hedging purposes, to the climate and wants of the South, and to farms cultivated by negroes.* Fences we must have. Timber is becoming scarce everywhere; and many districts are so completely exhausted as to be, measureably, abandoned from an actual want of fencing material; the lands being too much worn, under the same wasteful course which destroyed the timber, to repay any outlay for enclosing. Timber, exposed to the weather, decays very rapidly in our climate; so that fences of that material require very frequent repairs and do not last long. The tax upon the labor of a plantation is enormous, even when well timbered; and still more, of course, where much hauling is requisite. Many of the finest plantations on the lower Missis-

sippi have no fencing timber, and cypress pickets have to be purchased for that purpose. Great part of Texas consists of prairie, on which the plant will grow most vigorously, forming an impassable fence in a very few years; and, with the China tree, (*melia azedarach*,) from its hardness, rapidity of growth and excellence for fuel and other economic purposes, will be the means, we confidently predict, of settling up millions of acres of that fine country, which would, without these, remain forever uncultivated, though by no means barren, wastes. Add to these the Pise, or dry clay house, and all the objections to a settlement in that magnificent stock country are done away with. Give Illinois such a plant for hedging, and a tree equal in value, rapid growth and easy cultivation, and she would quickly become the first agricultural State of the Union. As it is, notwithstanding the rigors of her climate and great dearth of timber, she makes lengthy strides towards the first rank.

The advantages of a proper subdivision of plantations by permanent enclosures, are sufficiently apparent. They are the very foundation of all improvement. The many fine tracks of hill-land, in these Southern States, which have had the cream skimmed from them, in repeated crops of cotton and corn, without other rotation and without manure, and have become cut up by gullies and stripped of their timber, might yet be reclaimed for other and highly profitable kinds of farming, by being promptly hedged in before it is too late. They might then, should the owners find it advisable to move their forces on to newer and richer lands, be turned into sheep farms or disposed of to advantage for that purpose. Without fences or fencing materials they are worthless.

Of the rapidity with which a perfect and substantial fence can be formed of this rose, we will only remark, that if properly planted, and tended with a reasonable degree of care, in four years a protecting fence may be dispensed with; and six years growth will render it proof against the most breachy stock.

Having thus enumerated the most prominent and valuable qualities of this plant for hedging purposes, we proceed to name the only objections, we are aware of, to its employment in that way, to any extent.

The great space occupied by an unpruned Cherokee hedge, is the principal objection made to it. But for *this* the plant should not be blamed. If planted, as it always should be, in a straight line, and not following the zig-zag of the rail fence, it can readily be kept within a reasonable limit, say with a base of from three to five feet. And the labor requisite to keep it thus within proper bounds, is not greater than is needed to keep up a rail fence; with this very great advantage, that the trimming may be done at any season of the year when the planter is most at leisure; and even if neglected for years, the only evil arising will be the temporary loss of ground occupied by the encroachment. The harbor afforded to vermin, snakes, rats, rabbits, birds, etc., is, in fact, a serious objection. The difficulty can be greatly lessened by trimming and keeping clean; and still more by providing for the negroes a few small, wire-haired terriers, in place of

the great, worthless, sheep-killing, food-consuming curs, most of them are now permitted to have about their houses.

We have an anxious doubt to express, at this part of our subject, and which we name with much hesitation and after long and serious thought. It is, that the Cherokee hedge will *and does* afford protection to the cotton moth, either in its image or crysalis form, in one and most probably both of which it most certainly hybernates. We throw out this suggestion, as remarked, hesitatingly; as it may prove that we are altogether mistaken; and, in the meantime, many may be, thereby, deterred from doing that which has been already too long postponed. It will not prevent our planting some miles of hedge, this winter.

The mode of planting most commonly pursued, has been to make holes with a spade or other implement, under the rail fence, following the *worm*, and inserting cuttings quite close together, say every three or six inches. By this method the most of the cuttings take root and grow, being kept cool and moist by the lower rail of the fence. Others, also following the *worm* of the fence, plant a short distance from it, putting the cuttings in with a grubbing-hoe. Any plan of hedging which occupies, at the very start, a space of five feet in width, is objectionable. Still more so is the crowding together so many cuttings, by which the plants are weakened at the first, and never afterwards acquire strength, even if tended, to form a substantial fence. The impossibility of tending the young hedge during the three first years of its growth, so as to give it complete possession of the ground, to the exclusion of briars, vines of various kinds, cane, China trees, etc., by which so many of those now growing are disfigured and injured, is even a more serious objection to its being crowded into the fence corners.

In order to have a strong and regular hedge, it is indispensable to have healthy, vigorous plants. These cannot be produced without cultivation and space to each plant. With the Cherokee Rose this is especially the case, as stout and vigorous shoots are needed from the first, that the *base* of the hedge may be composed of such. If consisting of shoots, the delicate growth of crowded plants, these are quickly choked out by those stronger shoots, which those plants that ultimately take the lead throw out, leaving the bottom and middle of the hedge a mass of dead spray.

The method of forming hedges of the Cherokee Rose, which we recommend as the true one, suggested by *theory*, thoroughly tested in *practice*, and now offered as the result of *experience*, is this: Upon a hill-plantation, already under fence, remove the fence; *grub out* every bush, briar, cane, etc., and *cut down* the large trees that will in any way shade or affect the hedge-row; upon the poorer portions apply a dressing of any manure that may be at hand; break up the ground with a good two horse plow, bedding it, to the width of twenty feet, or as wide as practicable; run a heavy harrow two or three times along the bed thus formed, and it is ready for re-setting the fence — which do to one side, so as to allow of the young hedge being tended with plow and cultivator. If the hedge-row em-

braces any new land, it is best to rake or burn off the leaves and twigs, or plow deep enough to mix sufficient earth with the light, leafy matter on the surface, to counteract its chaffiness. Where it crosses any low wet spots, throw up a bank with the spade, leaving a ditch on the lower side sufficient to drain the bank to the depth of from three to four feet. Let all this be done as early in the fall as practicable.

If intended to enclose woodland, to remain as such, a space of *at least* sixty feet must be cleared for the hedge row, as this plant will bear no shade. It is not necessary to fence it in from stock roaming at large, as they rarely injure it. A range of poles, raised two or three feet upon forks, immediately over the plant, will be all sufficient.

River-bottom lands must be drained to grow good hedges. The bank of any ditch that drains the land to the depth of three feet, the contents of which form the bank will answer well. Occasional flooding of two or three days duration we have never found injurious. Standing-water, however would inevitably destroy the plant.

Prairie-land must be broken up *during the previous May or June*, to the width of thirty or more feet; then bed up in the fall, as above directed, preparatory to planting.

At any time, when the condition of the soil will admit, from the first of November until the first of March, but the earlier the better, plant the cuttings. These are to consist of pieces, from twelve to fifteen inches long, of *strong shoots* of the previous summer's growth, cut with a sharp knife or a pair of those stout shears made on purpose for rose pruning and which make a draw cut — *not* chopped into lengths with a hatchet. This may be done during wet weather, assorting the cuttings with the tops all one way and burying them half their length in moist ground until wanted; but it is better to set them out as they are cut from the plants. If the cuttings are to be transported to a distance, they may be packed closely in a box or barrel with alternate layers of moss from old logs made *moist* but not *wet*.

After staking out or marking with a line or otherwise, the intended line of hedge, trundle along it a wheel made of two inch plank, three feet in circumference, in the edge of which is inserted a stout peg, which of course will make a hole every three feet. Let any requisite number of hands with spades, dig small trenches at each of the peg-marks, say fifteen inches long (across the hedge-row) ten inches wide and ten deep. One steady hand follows with a basket of cuttings, and inserts three in each trench, at least two-thirds of their length in the ground, drawing in some of the loose dirt with his foot and pressing it *firmly to the base* of the cuttings. If the soil is good, the trenches may then be filled up, by other hands following with hoes, and pressed down lightly with the foot; but if poor or thin, let the trenches, by all means, be filled up with rich compost, or cow-pen manure, from a cart which should follow the one who plants.

It has been objected to this mode of planting that it entails considerable labor and some care; and that the distance between the cuttings is too great. When the object to be obtained is considered—that of forming a permanent and cheap fence, and within as short a period as possible—the care and labor requisite do not deserve a thought. If true in any instance, that *what is worth doing at all, is worth doing well*, it is assuredly true in this. The writer planted in this manner, filling every trench with compost, at the rate of fully one-third of a mile per day, with five ordinary hands and one cart. The land was very poor, yet the result is a most promising young hedge, without a gap in the whole. The increased distance between the plants is indispensable to a vigorous, hardy growth; not a tithe of the cuttings are needed; the work can be done in a much more perfect manner; and the after tending is materially lessened and facilitated.

Immediately after working over the corn the first time, throw a light farrow to the young rose plants, moulding with the hoe and carefully cutting out or covering every weed and sprig of grass. At the next tending, which should not be delayed long enough to permit any part of the hedge-row to become foul, draw out the extra plants in each trench, leaving only one, and taking care not to loosen the earth round the roots of that one in pulling out the others. The cultivator used twice and the hoes once, after this, will suffice.

At some time during the following fall or winter, let a careful hand cut off, with a sharp knife or a pair of rose-shears, every sprout or shoot, to within a foot of the ground. Early in the spring bed to the plants with a good turning plow, to the width of four feet on each side, previously top-dressing the poor spots with any convenient manure. Once during the summer let the hands lay up the shoots, which will be numerous and strong, lengthwise of the hedge, using light forks, and *pressing the shoots down*. This must be done again in the fall and winter, when the ground on each side should be again plowed. After which no further tending will be requisite, other than to chop down weeds and briars twice during the summer, laying up the shoots snug by, as before, until the hedge has heighth and width of base sufficient. To this it must be limited by the use of light bill-hooks, with long handles, each winter.

We have had satisfactory assurance that stronger and more vigorous plants are produced from seed than from cuttings; and that the seeds vegetate rapidly under proper management. Seed is produced abundantly; it can be easily obtained and transported to any part of the country, and it can be sowed in less time than cuttings can be properly planted; requiring, however, much more care in the after tending during the first year. Except in the facility of transportation to a distance, not much is gained by the use of seed instead of cuttings. The *hips* must be gathered during November, mixed with two or three times their bulk of sand or mellow earth, and kept in a cool, damp cellar or pit until the beginning of February, when they must be picked or sifted out, and rubbed to pieces, so as to separate the seeds from the husk. The ground having been prepared as for

planting cuttings, half a dozen seeds may be dropped at the distance recommended and covered with half an inch of loose soil, the dropper then pressing the spot lightly with his foot. They will soon sprout and grow, and must be then kept completely clear of weeds—seedling roses will bear *no* shade of that kind. The surplus plants had better be pulled up, leaving only two or three in a place; one only being left, the next spring, to form the hedge.

Unless where their scarcity may render it an object, it is better not to transplant either from seeds or cuttings. Nothing is, otherwise, gained by it, and the labor is much greater than in planting cuttings, Layers make strong plants, but we do not use them, for the reason given above.

We will close by remarking that the cutting and seeds of the Cherokee Rose may be obtained in many parts of the country. In the vicinity of New Orleans, Natchez, Bayou Sara, Baton Rouge and many other points on the Mississippi; and of Charleston, S. C., Savannah, Geo., Mobile, Ala., etc., etc., they can be procured, we presume, without the slightest difficulty and at but trifling expense. To those *subscribers to the Review* who may not be able, otherwise, to procure them, and especially to residents of the prairies of Texas, we will with pleasure forward cuttings or seeds, being put to no expense in the matter. T. A.

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## ART. IV.—POLITICAL ECONOMY.

In our last number we considered the nature of labor in reference to its physical and moral uses. We also noticed the effects of an unequal distribution of useful employment upon the members of a community, and likewise the importance of directing the application of labor to such objects as are best calculated to preserve and improve the natural wealth of the country.

In resuming the latter branch of this subject, we shall proceed to discuss some of the causes which tend to divert both labor and capital from those employments which we regard as most conducive to the general good.

If we examine the history of the world we shall discover that far the greater part of mankind have ever been more disposed to submit to their condition, than to make any great effort to remove the evils which oppress them. Laws, customs, and pursuits give tone to the sentiment, direction to the genius, and form the habits of the people of every country, and under the operation of these influences, individuals form their plans of life, and schemes of happiness. Hence, the great difficulty of effecting any important change in either their morals or pursuits. We must convince them of their errors and remove their prejudices before they can appreciate the benefits proposed by a change of their condition; and when we have even convinced their judgment, there still remain their strong affection for venerated customs, and the influence of former habits and associations,

which constitute part of their nature, and lie beyond the reach of argument, and can only be subdued or overcome by great minds, or by the influence of some pressing necessity. Indeed, necessity arising from the laws that govern man's nature, may be regarded as among the great agents of civilization. The inherent propensity in man to propagate his species, and the love for his offspring, tend continually to increase the numbers beyond the means of subsistence, so that the physical wants induced by increase of population, call into action the mental faculties which were designed by the Creator to aid man in the discovery of those inexhaustible sources of subsistence which were provided for his support in a civilized state.

It is natural that the first remove from a state of barbarism should be the most difficult, being ignorant of all the arts and advantages of civilization, no desire could arise in the mind of man for its attainment. Hence, even at the present time, a large portion of the earth is inhabited by people who have not yet emerged from the hunter's state. It may be asked, how have these so long avoided that necessity which arises from the increase of population? We answer, by wars of extermination waged between different tribes, for the possession of the best hunting ground, and other barbarous customs calculated to prevent the increase of numbers.

There are three states distinctly defined in the history of man, namely, that of the hunter, the shepherd, and the agricultural—the first two necessarily preceding the era of written history. Consequently, the nature of that necessity which urged a few small tribes to take the initiatory step in the progress of civilization can never be correctly known, and we are left to infer the causes which gave rise to this necessity, from the economy of man's nature, and from the influences which control him in a savage state.

Suppose a peninsular such as Greece, Italy or Yucatan inhabited by one tribe of barbarians, and a more powerful one in possession of the continent in their rear, preventing, by their hostility, the inhabitants of the peninsular from changing their hunting ground. The game upon the peninsular would, in time, become insufficient to support the increase of population. In such circumstances the idea of protecting those animals used for food, from the depredations of the beasts of prey, would naturally occur, and acting upon this suggestion, the transition from the hunter to the shepherd's state, would be easy and natural. But this state could not long continue, for the increase of population would, in time, demand a further increase of food; and necessity, stimulating the mental faculties, reason would point to agriculture as the great source of human subsistence, and man would become a tiller of the ground.

This supposition appears still more plausible when we consider the fact that European civilization made its first appearance in Greece and Italy; and also that the monumental ruins of Yucatan warrant the conclusion that the civil arts which in many respects obtained a high degree of perfection on this continent, had their origin in that peninsular.

It is worthy of observation, that although it would appear that these distinctive states or conditions had been resolved into one by the influence of civilization; yet in its progress from east to west, or we might say in the settlement of all new countries, the elements of these three states of society have a natural tendency to separate. The pioneer is a hunter, feeding upon the flesh of wild animals and clothing himself with their skins; and were he not followed by the other classes it is probable that he would totally abandon the arts of civil life.

Next follows the herdsman, relying upon the spontaneous productions of the land for the subsistence of his cattle. And then comes the tiller of the ground, and in obedience to the divine injunction, extracts the means of subsistence from the hidden treasures of the earth, and thus prepares the way for the artist and manufacturer. But in process of time the game and the range disappear; and for want of these sources of subsistence, the hunter and the herdsman cease to exist as distinct classes. In these migrations from east to west, the manufacturer and the artist remain far in the rear—for the reason that in newly settled and thinly inhabited countries they cannot find that constant and certain employment which is necessary to their prosperity. And from this cause the producers of food, and the producers of clothing, and other comforts of civilized life, become separated at a great distance from each other; and to remedy this inconvenience commerce is constituted the agent of both parties in the exchange of their respective products. This is a natural condition, induced by the progress of civilization from east to west, and until the entire continent shall have been settled by civilized man, the current of commerce must continue to flow in the same direction, carrying with it the manufactures of the east and returning with the agricultural staples of the west. Hence, therefore, commerce may be ranked among the most important elements of civilization, and as such, the principles upon which it is based, and the limit to which it may be encouraged without violence to the prosperity of the producing classes are subjects highly interesting to every class of the community.

Commerce seems to require a local basis of operation, from which, as from a common centre, the distant enterprises flow, and to which the profits return. These great stations attract the capital from every part of the earth within the range of their operations; and the manufacturer and the artist also establish themselves here for the convenience of distributing their wares.

Every extension of the circle of which this basis is the centre, serves to enlarge the volume of commerce and to increase the demand for the products of the manufacturer and artist at this point. Those engaged in commerce do not generally consider that it is of any disadvantage to their interest that the producer and consumer are located at a great distance from each other; nor is it believed that the artist and manufacturer suffer any considerable degree of detriment or inconvenience from this cause, so long as they remain without competition in their respective vocations, at the distant points. But as we proceed from this centre or basis of operation, the inconvenience and disadvantages to the producers of pro-

visions and raw materials continually increase, until finally many articles of great value in the arts, as also many agricultural and horticultural products, by reason of their bulky or perishable nature will not bear transportation to market, and, therefore, cease to be of value to the producer. This is now the case in respect to many valuable products of the Western States, and it is highly important that the true nature of these disadvantages should be understood, to the end, that the best means for removing them should be adopted. The thing most necessary to the prosperity of the west, is a convenient and constant market for the products of the soil; and although this is a fact generally understood and appreciated, yet it does not seem to have occurred to the general mind that it was practicable to create or build up a market at home; therefore, the schemes of amelioration generally have reference either to the extension of trade with foreign countries, or to cheapening the freights and charges between the east and west, by improving the facilities of transportation.

Both these plans are meritorious and worthy of encouragement, but they do not strike at the root of the evil, and will prove to be little better in the end than mere expedients, unless followed up by the introduction and establishment of the arts and manufactures. For were all restrictions removed from foreign commerce, and free trade established throughout the world, still the demand for our great staples would nevertheless soon find a limit in foreign markets; and cheapening transportation to the east would serve to stimulate production in the west, and bring the money-price of western products to their old standard. The cheapening of freight, however, would greatly benefit the country, by diminishing the relative difference between the value of western products and eastern manufactures.

But lower the rate of freights to the eastern markets as we may, still those who reside nearer than ourselves will retain their present relative advantage over the western producer, and, consequently, be better remunerated for their labor.

But the vital objection to an acquiescence in the present state of things arises from the constant drain of the natural wealth of the country. For a continuance in this system of transporting the leading staples in a raw condition to distant markets, must finally exhaust the soil of the west, while it tends to enrich the soil near the great stations of commerce. And thus the agricultural wealth, as well as the mercantile and manufacturing, will, in time be concentrated near the great markets. It is in the power of the people of the west to prevent such a result; and if wise and patriotic, will not wait until driven to act by *necessity*, but with a prudent forecast anticipate the coming evils and guard against them in time.

Manufactures are of slow growth, and many branches require much capital to establish them upon a scale that will make them profitable; while all require the countenance and encouragement of the people of the country in which they are established. This is more especially the case in regard to the handy-crafts. These are the pioneers of this branch of industry, and although less imposing, are in some respects quite as important as the larger branches which require more

capital. For, owing to the large number engaged in the handy-crafts, they constitute a greater body of consumers; and being more generally distributed throughout the country their sympathies are more in unison with the agricultural and other classes.

Any district of country which produces more provisions and breadstuffs than it consumes, possesses the means of encouraging and supporting most of the useful and necessary handy-crafts; for some of the most important of these require little or no capital to commence with—such, for instance, is the case in regard to shoemakers; and yet a very large portion of the shoes and boots worn in Missouri are made in the Eastern States, by operatives who are fed upon bread and meat at about double the price that the same provisions cost in the interior of Missouri—while these articles are, perhaps, made of leather manufactured from hides grown in Missouri and tanned in Massachusetts. Shoes and other articles made of leather may not appear to many as being of much importance, either as an article of manufacture or of commerce; but if we enter into a calculation we shall find that the difference would be very important between manufacturing all the articles made of leather in this State, and purchasing them abroad. If we suppose the population of Missouri to be 600,000, and that the average cost of shoeing each individual is $2,50 per annum, the aggregate amount will be $1,500,000, a sum equal, as we believe, to all the specie in the State, except that in the banks. Encouragement to the handy-crafts is the first step towards the introduction of manufactures. If the people of each county would resolve to encourage all such branches of mechanism as their wants required, they would find but little difficulty in procuring the operatives. They should not, however, encourge the settlement here of more operatives in any one trade, than the neighboring country could reasonably support; and each citizen should consider it a matter of duty to employ the mechanic at home, rather than to purchase an article of the same kind, made elsewhere. By adopting this policy, a demand would be created for many articles which never find their way to more distant markets, and most of the money received for the leading staples might be kept in the country.

But these operatives need social encouragement as well as employment. In places where many are congregated together it is natural for them to associate with each other; but in the interior where there are but few mechanics they feel the want of social intercourse, and if they do not receive that consideration which is due to their merit, as citizens, they become discontented, and either fall into vicious habits, or change their place of residence; for few individuals can be contented to remain in a community without its sympathy.

By thus distributing the handy-crafts throughout the entire country, the transportation of a very large portion of the raw material to distant markets would be saved, and while this policy would counteract the constant tendency of capital to concentrate at the great stations of commerce, it would give stability to the pursuits, and prosperity to every part of the country; and in a great measure prevent those

revulsions which so frequently disturb the business and happiness of the community.

But these advantages, although of easy attainment, can not be secured without concert. Without concert and social combinations, no great object ever has been, nor, perhaps, will be affected; the minds of men must be brought to act upon, and with each other; sympathy must prevail, and a desire to consummate one commmon end must become general; otherwise, individual efforts are impotent and fruitless. No people, perhaps, on earth, have ever occupied a more important position, or been charged with a higher trust than the present inhabitants of the Mississippi Valley. The present population of this region is but the germ of a mighty empire; and it may be said that no part of the globe presents so large and so fertile a district—extending through so many degrees of latitude—and watered by one system of streams—uninterrupted by any of those natural obstacles which have ever been considered as the boundaries of nations; and making enemies of those whom they divide.

Nor has the history of man presented a parallel increase of population to that which has obtained here for the last half century — an increase which is annually augmented, and which, according to every reasonable calculation, will continue unabated until limited or modified by the resources of the country. If this unparalleled increase should be permitted to continue by Him who rules the destiny of nations, the population of the Valley of the Mississippi will number 100,000,000 within seventy-five years from the present date. It is the privilege of the present inhabitants of this vast region to give direction to the policy and morals of a people who, at no very distant day, will equal in numbers the entire population of all Europe. Never before has a comparatively small number of individuals had it in their power to exert so extensive an influence upon the moral destiny of the human family, as have the present inhabitants of this region. But it must be borne in mind that the duties arising from this favorable position are commensurate with this privilege, and demand that the active energies of every individual should be properly applied in giving the best direction to the policy and moral institutions of the country. Then let all men come up to this great work—let us examine with the most rigorous scrutiny every principle which enters into the policy of our institutions, whether civil, political or moral; and while we shall promote our own immediate prosperity by wisely adopting those principles only, which are pure and sound, we shall lay a strong and durable foundation for the happiness and glory of the millions of the future.

In this great work the philanthropist may labor with something more than the mere hope of benefitting his race; for the good which he shall do in the present generation will be multiplied many times in the next, and from the seed which he may sow, shall his children reap an abundant harvest. Here ambition may find a sure road to fame; for the names of the early benefactors of this great Valley, will expand with the mighty increase of its population—and as its boundless re-

sources shall be unfolded—and its moral influence extended throughout the earth—the record of their virtues shall be borne to its remotest bounds, and translated into the language of every land.

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## ART. V.—MANUFACTURE OF COTTON IN THE SOUTH AND WEST.

We have long entertained the opinion that the manufacture of American grown cotton, would, in time, be transferred from Great Britain and the continent of Europe, to the United States: and that it would ultimately be located principally in the cotton growing region, or in the nearest provision growing districts, where the facilities of transportation and propelling power could be obtained. In making up this opinion, we take no notice of labor, for the reason that it will ever abound where capital and enterprize lead the way, and offer a fair reward, and permanent employment. Within the cotton region, however, labor is already abundant, and by reason of the peculiar institutions of that portion of the Union, it must continue to increase, and become more abundant every year. From our present view of the subject, however, we deem it of little importance to the general interest of the inhabitants of the Mississippi Valley, whether the cotton produced within its limits, shall be manufactured in the cotton or provision region; for the facilities of exchanging the products of the southern and northern portions of this vast region, are so great, that the manufacturing operatives, will, in time, be principally fed by the provisions of the north, whether the mills are located above or below the line of cotton growing, although, in a local point of view, it would doubtless be of advantage to the north if the factories were located in that quarter. Still the Valley of the Mississippi, from south to north, constitutes one community of interest; and extending through nearly twenty degrees of latitude, an active exchange must from the nature of things, always be carried on between the products of the two extremes: and the prosperity of one part must ever contribute to that of every other.

We have been drawn into these hasty remarks by a paragraph from the "Pensacola Live Oak."

"Cotton Mill with Negro Operatives.—We had the pleasure, a short time since, of visiting what to us was a novelty, viz.: a cotton manufactory, the machinery of which is tended by negroes. It is a very neat little mill of about 1,000 spindles, located at Arcadia, a delightful spot in the neighborhood of Milton, and some seventeen miles from Pensacola. The machinery is moved by an ample fall of water, and with thirty-three or thirty-four young colored girls, six or seven colored boys, and two or three white overseers, from the north, turns out some 5,000 yards of excellent domestic, weekly. The mill is in as fine order as any

we have ever seen—the operatives all young, intelligent, and cheerful. They are provided for at one table, and their looks do credit to their fare. They were selected, with care, for this establishment, and probably at an average cost of about $400 each. The mill is owned by a small company of enterprising gentlemen, of this city and vicinity, and has been in operation but little over a year. As an experiment, we are happy to hear it has more than answered the sanguine expectations of its worthy projectors."

We should have been pleased if the writer had gone more into detail, and given his readers some account of the profits accruing from the investment. The account however, if true, and we have no reason to doubt of it, establishes the important fact—which has been long questioned—that negroes can be made efficient operatives in the manufacture of cotton. This point once established, and the price of the raw material remaining at its present low rate for a few years, manufacturing will begin to take deep root in the south and west; and when firmly established, will be sustained against the capital and labor of the balance of the world.

To show that even free labor is also both abundant and cheap in the south, we extract from the "Commercial Review" the following account of the cotton mill established by Mr. Daniel Pratt, in Autauga county, Alabama:

"In other pages of this Review we have spoken of the progress made in manufactures by the people of Alabama.

"A few weeks ago we had the pleasure of passing through their State, and of visiting the remarkable town of Prattsville, a description of which was promised. For this we have the material, its enterprising proprietor having appropriated to us several hours in various explanations throughout his immense establishment.

"Daniel Pratt is a remarkable instance of that success which energy, enterprise and worth of character will every where secure.

"He was born in the northern States, and left Lowell for Savannah, Georgia, where he became engaged in building bridges, but without much success. He removed thence to Alabama, with no other effects than a few chattels, but blessed with an energy which was indeed everything to him in his slender fortunes. We heard an anecdote of his industry at this period, in being discovered before the light of day with a supply of corn, which had been procured for his family. But difficulties such as these were nothing to so dauntless a spirit.

"Mr. Pratt's earliest business in Alabama, was the construction, on a limited scale of cotton gins. This was about 1833 or 1834. His first limited purchase was the privilege of water power. His business gradually progressed in extent and profit. The present site of Prattsville was bought for $20,000 from Joseph May, and contains 2,000 acres. The purchase money was soon realized from the sale of gins, and promptly paid. At this period an old saw-mill and a few indifferent huts were all that existed on the place.

"Prattsville is situated twelve miles north-west from Montgomery, on the west

side of the Alabama river — four miles from the town of Washington, and eight miles from Robinson Springs, a fashionable watering-place. It is on Autauga Creek, from which the county takes its name. 'Autauga,' in the English language signifies 'corn dumpling.' Autauga creek is a bold, clear stream supported by beautiful springs which rise aboui fifteen miles from its mouth. It is the most uniform stream in the world—neither depressed by a protracted drought, nor much swollen by heavy rains. It is, consequently, one of the best character for manufactories, for it can always be depended upon. The fall is pretty rapid, and the water can be worked over every half mile. The banks are bold, and the pine forest making up to the edge, so that there is no swamp near the creek. The woods abound with pine timber, the country healthy, the water good, navigation convenient, and every thing is favorable for the erection of extensive manufactories. The bed of Autauga creek is of a sandstone, generally reaching across — hence the foundation is superior for mills.

"Mr. Pratt's fortunes began to advance from this purchase. His improvements have been extraordinary, and one cannot realize they have been made in so short a period, save by the wand of an enchantress. He has also an interest in a large business house in New Orleans.

"The immense establishments at this place include a large cotton gin manufactory, which completes ten to twelve gins per week. They are shipped to New Orleans and Mobile, for the supply of Alabama, Louisiana, Mississippi and Arkansas. The gins contain fifty saws each, of the value of $3 to $4 a saw. The steel plates for saws are imported from the North, but all the rest of the machinery is manufactured upon the place, in the extensive sawing, planing, mortising, grooving and other departments, conducted by water power. Several saw-mills are employed in getting out necessary lumber for buildings, &c. The Alabama iron we observed in use, in casting railroad axles, some of which it appears are contracted for in Prattsville.

"The cotton manufacturing establishment is a new addition to the premises. It has the power of 3,000 spindles, all of which were not adjusted when we were there. The cost of the machinery for this power is estimated by Mr. Pratt at $40,000, or over $13 the splindle. No part of this cotton establishment has been in operation six months. The persons employed are taken from the country around, men, women and children—families being preferred—who are furnished with houses at small rent and obtain their provisions at the shops and neighboring farms. Average wages $8 per month. There is no difficulty in getting operatives, who soon become expert in the business. Negroes have not been employed from the abundance of other labor.

"The Prattsville Factory, when in operation, will consume 1500 bales of cotton annually. The cotton is bought in the neighborhood. The cloth is of a coarse quality, for which a ready market is always at hand, at ten cents the yard

containing one half pound cotton. Purchases of cotton in the last season were made at nine and a half to ten cents.

"Mr. Pratt's enterprise displays itself in every manner. The town contains two school houses for the children of operatives, and two churches, Methodist and Baptist; two or three stores, a resident physician—but we believe not yet a lawyer—bad taste! A newspaper was seriously thought of when we were there. There are upwards of one hundred and fifty to two hundred hands employed, who receive their wages monthly. Their appearance is healthy and happy. Upwards of forty small buildings have been constructed by the proprietor.

"The private mansion at Prattsville is a splendid structure, with beautiful neighboring grounds. A fountain plays, and various shrubbery is scattered around. The prospect from the building is imposing.

"We have not mentioned half the things at Prattsville worthy of admiration—the neatness, the system, the order, the extent. A single power working every thing—corn, flour, cotton, saw, and every other mill—the appended blacksmithing and carriage establishments, etc., etc.

"In manners the proprietor is unostentatious—simple and republican in his course of life. His energies are indomitable, and his industry knows no impediment or regards no toil. Night and day this man of enterprise may be found at his post. The interior of his mansion is adorned with a large hall and gallery of paintings. Thus are not the arts forgotten. A splendid picture of Rome and St. Peters adorns the hall, executed by our townsman, George Cook, of New Orleans. Mr. Clay appears as large as life, and we understand that Mr. Calhoun and Mr. Webster will be procured to adorn and illustrate in the same style the gallery.

"Prattsville is capable of employing with its water power, 30,000 spindles, and according to the estimate of its proprietor, $1,000,000 will create there a town of 3500 inhabitants, and give employment to them.

"We take leave of this interesting place with regret, our memories of it are so lively. May every fortune attend it in the future! We hope to see it for the south a great manufacturing Lowell, and to see many such Lowells among us. Here is an instance already of an immense fortune amassed by industry and energy in scarce the third of a generation. Who will imitate the example?"

The population of no other country would be more benefitted by the introduction of manufactures, than would the non-slaveholders of the south. The more fertile lands being almost exclusively in the possession of the slaveholders, the former labor under disadvantages from which there is scarcely a hope of escape by agricultural employment; and the establishment of manufactures would not only give them profitable employment as operatives, but would afford them a market for many agricultural products for which there is at present no demand.

In support of these views, and as evidence that the south is becoming awakened

to this subject, we give the following extract from a highly intelligent and practical planter in Alabama:

"If I can get my affairs arranged so as to allow me the control of my time, it would afford me pleasure to write essays for your Journal. I desire to collect some statistics on the subject of *cotton;* the quantity grown in every county; the kind of labor employed; the ratio of increase; the number of hands engaged; the number of spindles now running, and their location; which will show their *distance* from the cotton-fields. I have long entertained the opinion that the spindles should be located in the nearest provision region to the cotton-fields; and the growers and spinners should be identified in feeling and familiar dealers with each other; and the result of this opinion when pursued, is, that we should have spindles enough in the Mississippi Valley to spin the cotton grown in it. The revulsions in trade in England, and the decline in cotton in the last ninety days, are strong proofs to my mind, that we should not allow any "*foreign power*" to have the control of the most powerful product of America. Yet we know that the cotton-growers themselves have been the most violent and influential opponents of this system. Cotton cannot be consumed till spun; therefore the holders of the *spindles* hold the power. Philanthrophy will hail with delight the union of the growers and spinners; for *then*, the naked will be clothed cheaper than at any former period of the existence of man."

The experiment of applying slave labor to the manufacture of cotton, was made some years ago, by Mr. William Doering, at Athens, Georgia, with eminent success; and there can no longer remain a doubt in the mind of any intelligent individual who is well acquainted with the mental and physical character of the black population of the United States, that slave labor can be made as efficient as any other in this important branch of industry.

Considering this fact as established, we conclude that Missouri possesses as many advantages for manufacturing cotton, as any other State of the Union. This is the true provision-growing latitude of the continent, and abounds in iron, coal and water-power; while it is accessible by navigation, open every month in the year to the introduction of the raw material from the plantations of the south.

The institution of slavery, which is generally considered as having retarded the increase of population in this State, may, nevertheless, be made the means of establishing manufactures at an earlier period perhaps than they could have been established without.

Slaves of the proper age may be considered as so much capital in hand; and as such might be advantageously invested in manufacturing stock, and while the profits of their labor would be greatly increased by transferring them from the farm to the cotton mill, the price of the fabric would be reduced to the consumer. Intending to discuss this subject more fully hereafter, we have merely suggested these hints at present for the reflection of our readers in the interval.

# ART. VI.—THE COMMERCE AND NAVIGATION OF THE MISSISSIPPI RIVER AND ITS TRIBUTARIES,

## CONSIDERED WITH REFERENCE TO THEIR IMPROVEMENT BY THE FEDERAL GOVERNMENT.

"Let it be remarked, that the intercourse throughout the Union will be daily facilitated by new improvements."

"The communication between the Western and Atlantic districts, and between different parts of each, will be rendered more and more easy, by those numerous canals with which the beneficence of nature has intersected our country, and which art finds it so little difficult to connect and complete."—[James Madison's appeal in behalf of the Constitution of the U. S.

"Whenever the annual expense of transportation on a certain route, in its natural state, exceeds the interest on the capital employed in improving the communication, and the annual expense of transportation, (exclusive of the tolls,) by the improved route, the difference is an annual additional income to the nation.—[A. Gallatin's Report of 1808.

In treating the subject of western commerce and navigation, especially in their relations with the Federal Government, we shall, for the sake of perspicuity, as well as convenience, divide it into several chapters.

The first, we will devote to a general view of the nature and extent of the country, including, of course, its navigable streams.

The second, will relate to its history, population, commerce and navigation.

In the third, we will speak of the power and the duty of the Federal Government.

### CHAPTER I.

When we speak of western commerce and navigation, we mean that commerce and that navigation, which appertain to the Mississippi river and its tributaries.

That river and its tributaries drain the great central valley of this continent, embracing twenty-one degrees of latitude, and fifteen degrees of longitude, twelve entire States, parts of three others, and two Territories. The States and Territories we include are, Ohio, Kentucky, Indiana, Illinois, Wiskonsan, Iowa, Missouri, Tennessee, Arkansas, Mississippi, Louisiana, and Texas; parts of New York, Pennsylvania and Virginia; and the Minesota and Missouri Territories. This valley comprises, within its limits, 1,200,000 square miles; 768,000,000 of acres, and half the population of the United States. The Rocky Mountains on the West, the line of the British possessions on the North, the Alleghanies on the East, and the Gulf of Mexico on the South, are, in general terms, the boundaries of this vast and magnificent area.

The great river of the valley takes its rise in about latitude 48 deg. north, and discharges its waters into the Gulf of Mexico in latitude 29 deg. 5 min. It flows through a channel 3,000 miles long. Its course is south, nearly 14 deg. east. Its width averages about half a mile. Its width does not increase with the volume of water, but is about the same at Galena, 1,600 miles above the mouth, as at New Orleans, where the volume is six times as great. It is 645 yards wide at Vidalia, Louisiana. It drains an area of 300,000 square miles. Its mean velocity at the surface, for the year, opposite Vidalia, is 1.88 miles per hour. Oppo-

site St. Louis its velocity is about three miles per hour, and with a fall of about one foot in six miles. Its mean depth, per annum, across the entire channel, at the same place, (Vidalia,) is about sixty feet. At St. Louis it is about twenty-two feet. The mean velocity is reduced about fifteen per cent. by friction against the bottom. The total amount of water discharged, per annum, in cubic feet, is 8,092,118,940,000.* About once in three or four years, the river is closed at St. Louis in the winter by ice, and it has been known to be frozen below the mouth of the Ohio. The season of highest water, above the mouth of the Ohio, is the spring, or first month of summer. The highest point, to which the water has been known to rise, was thirty-eight feet and one inch above low water mark, on the 27th of June, 1844. 'The obstructions in the river, dangerous to navigation, and requiring removal, are snags, sawyers, sunken logs, stumps, rocks, sand bars and wrecks of steamboats. These occur more or less frequently, from the mouth of the Missouri to New Orleans. The obstructions above the mouth of the Missouri, are the Upper and Lower Rapids.

The Lower, or Des Moines Rapids of the Mississippi, are two hundred and four miles above St. Louis, and beyond the mouth of the Des Moines river, whence they derive their name. Commencing a little above Keokuk, the Rapids extend nearly up to Montrose, or old Fort Des Moines, opposite to which is the town of Nauvoo. The length of the Rapids is estimated at eleven miles, having a fall of twenty-four feet. 'Here' says Professor Nicollet, 'the Mississippi tumbles over ledges of blue limestone, at all times covered with more or less water, and through which many channels have been worn by the action of the current. During low stages of the water, the passage of the Rapids is very difficult, as well in consequence of the shallowness of the water, as the narrowness and tortuousness of the channel, so that the time of practicable steamboat navigation is shortened by nearly three months in the year, which is about the duration of low water in the river.' This, together with closing of the navigation by winter for nearly four months more, reduces the season of practical steamboat navigation to about five months in the year. A system of improvements was commenced by Capt. Lee, of the U. S. Corps of Engineers, under the authority of the Government, and continued with satisfactory results until the appropriation was exhausted.

The Upper, or Rock River Rapids, so named from their proximity to Rock River, are fourteen to fifteen miles long, extending from Rock Island to near Port Byron on the left, and Parkhurst on the right side of the river. The fall, according to Capt. Lee, from the head to the foot of the Rapids, is twenty-five and three-quarter (25¾) feet, and very much of the character of the Lower Rapids. In consequence of the short turns and narrowness of the passes between the reefs, boats cross the current obliquely, and run great risk of destruction. Capt. Lee has demonstrated the practicability of removing these obstacles, so as to afford a

* Prof. Forshey.

safe passage up and down both Rapids, and thus a continuous navigation from the Gulf of Mexico to the Falls of St. Anthony, of 2,200 miles."

The principal tributaries of the Mississippi are, the Red River, the Yazoo, the Arkansas, the White, the St. Francis, the Ohio, the Kaskaskia, the Missouri, the Illinois, the Des Moines, the Rock, the Wiskonsan, the Chippewa, the St. Croix and the St. Peters.

The length of steamboat navigation, upon the principal of those rivers, is about as follows:

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|---|---|
| Mississippi, from the Gulf to St. Anthony's Falls, | 2,200 miles. |
| Missouri, from its mouth to the foot of the Rapids, | 2,000 " |
| Red River, to head of navigation, | 1,100 " |
| Ohio, to Pittsburgh, | 1,000 " |
| Arkansas, to mouths of the Neosho and Verdigris, | 630 " |
| Illinois, to Ottawa, | 250 " |
| Rock River, said to be upwards of | 200 " |
| Wiskonsan, | 300 " |
| St. Croix, | 55 " |
| White River, to Batesville, | 300 to 400 " |
| St. Francis, about | 100 " |
| Yazoo, | 100 " |

The Ohio, which, at present, is the most important of the tributaries of the Mississippi, is, including the Alleghany river, 1,200 miles long. At Cincinnati, which is about equi-distant from Pittsburgh to its confluence with the Mississippi, it is 534 yards wide, which may be assumed as its average width. Its annual range there, from low to high water, is about fifty feet; its extreme range on record, sixty-four feet, (at the time of the flood of 1832.) It generally reaches its lowest stages in August, September and October; and its greatest rises in December, March, May and June. For a long distance below Pittsburgh, it is frozen over almost every winter, for several weeks; at Cincinnati it is not thus closed oftener than once in five years on an average. Its current, when low, does not exceed two miles an hour; when at a mean height, three miles, and when higher and rising, four to five miles. Its immediate valley has an average width of one mile.* It has the following tributaries: the Monongahela, Alleghany, Beaver, Kanawha, Muskingum, Hocking, Scioto, Great Sandy, Great and Little Miami, Licking, Kentucky, Wabash, Salt, Green, Cumberland and Tennessee, which drain a region of upwards of 130,000,000 acres—an area three times larger than all New England, and as large as all the Atlantic States north of the Potomac. Of these rivers, the Tennessee is navigable to Chattanooga, 485 miles; the Wabash to Lafayette, 300 miles, and the Cumberland to Nashville, 200 miles.

The Missouri River rises within one mile of the head waters of the great river of Oregon. It opens the "gates of the Rocky Mountains," at a point four

* Cincinnati Gazette.

hundred and eleven miles above the head of its navigation. The following are some of its principal tributaries, each navigable, from one hundred to eight hundred miles:

| | | | |
|---|---|---|---|
| The Yellowstone River | - - - - - - - - - | 800 | yards wide at its mouth. |
| Chienne | " - - - - - - - - - | 400 | " " |
| White | " - - - - - - - - - | 300 | " " |
| Big Sioux | " - - - - - - - - - | 110 | " " |
| Platte | " - - - - - - - - - | 600 | " " |
| Kansas | " - - - - - - - - - | 233 | " " |
| Grand | " - - - - - - - - - | 190 | " " |
| La Mine | " - - - - - - - - - | 70 | " " |
| Osage | " - - - - - - - - - | 397 | " " |
| Gasconade | " - - - - - - - - - | 000 | " " |

The length of the Missouri, from its source to its mouth, is 3,096 miles and no substantial obstruction impedes its navigation from its mouth to the falls, 2,000 miles. Considering the Missouri as one river from its sources to the Gulf of Mexico, it is the longest in the world. Its average rapidity is nearly twice that of the Mississippi, as the average level of its valley is nearly twice more elevated than that of the Mississippi. Its waters are turbid, its current impetuous, its channel very changeable, and obstructed by numerous snags, sunken trees, rafts, beds of sand, embedded logs and trees impending from the banks. Ice and drifts render its navigation in the winter impracticable. It is more or less swollen by freshets from February to July. The main annual freshet almost always occur in June or July. For the other six months of the year, the navigation is attended with constant danger and difficulty. The Valley of the Missouri is narrower, more elevated, less subject to inundation, and less cut up by lakes, bayous, lagoons, &c., than that of the Lower Mississippi. But the obstructions of the river are more numerous, and more firmly imbedded. The staple articles produced in abundance, and of excellent quality, upon the banks of the Missouri, are hemp, tobacco, corn, and live stock.

The Yazoo River is in the State of Mississippi, rises on the borders of Tennessee, and runs in a S. S. W. course into the Mississippi river, about 12 miles above the Walnut Hills, and 142 miles above Natchez. It is about 230 miles long, is narrow but deep, and is navigable about 100 miles. It drains a very fertile country, abounding in plantations of cotton. Principal obstructions, snags.

The Red River rises in New Mexico, and flows southeasterly into the Mississippi about 240 miles above New Orleans. Its serpentine course is 1,800 miles, with a narrow channel. It derives its reddish color, which gives it name, from a rich red earth which exists far up toward its sources. About three hundred miles from its mouth drift-wood has collected to such an extent that the river is covered for about 40 miles. Upon this "Raft" as it is called, sediment has been deposited in high water, and vegetation flourishes in many parts as though it were

upon *terra firma*. About nine years ago this raft was nearly removed by the federal government; but its subsequent neglect has been followed by the re-formation of the raft. The river is navigable up to this obstruction, and were it removed, steamboats could ascend 700 or 800 miles farther. The banks of the river are of a very fertile character, and their produce in cotton and indigo, &c., is becoming of great importance in commerce.

The ARKANSAS RIVER is one of the most important tributaries of the Mississippi, rising in the mountains in latitude 41 deg. north, and running in a south-easterly course 2,173 miles to the Mississippi. It may be navigated with suitable boats 1,981 miles. Steamboats starting about the first of February, and meeting the annual freshet, may ascend that distance. Later in the year the river becomes low, and about 1,500 miles up, the water seems to stand, in dry seasons, in isolated pools, with no apparent current. Some of the streams which are tributary to the Arkansas are navigable a few miles. In seasons of very low water some of those tributaries impart to the waters of the Arkansas a briny taste. In the lower Arkansas the waters are sluggish, the country flat and much cut up with bayous and lakes. The bottom lands along the river are generally fertile, and produce cotton, corn, yams, &c. The mouths of the Neosho and Verdigris rivers, about 630 miles up the Arkansas, are as high as steamboats usually run. In that vicinity are great tracts of excellent land. Above that point, the river spreads to a great width, occupies sandy beds, has low banks, and abounds in shoals, so that it cannot be regarded as navigable more than a few miles for steamboats. Snags, logs, impending trees, sand bars, and occasionally rocks, are the impediments to successful navigation of this river.

The WHITE RIVER rises among the Ozark hills of north-western Arkansas and south-western Missouri, and has a course of about 600 miles, emptying into the Mississippi a few miles above the mouth of the Arkansas river. Its tributaries are numerous. It is navigable for steamboats of a small class upwards of 400 miles. Up to the mouth of Black river, there are but few obstructions, and these could be easily removed. With a little improvement small steamboats could ascend even to the Missouri line, and have good navigation for half the year. There are some very productive lands upon this river. Some of the lands, however, are swampy and require reclamation. Two of the tributaries of this river, the Current, and the Black, have their origin near the iron mountain of Missouri.

The ST. FRANCIS RIVER rises in St. Francis and Cape Girardeau counties, in Missouri, and running a southerly course, nearly parallel with the Mississippi, through great swamps, empties into the Mississippi, a few miles above Helena, in Arkansas. It is believed to have been navigable, formerly, for upwards of five hundred miles. Steamboats can now ascend but one hundred to one hundred and fifty miles from its mouth, owing to the obstructions caused by the earthquake of 1811. By that earthquake the original channel of the river was broken up for nearly thirty miles. Imbedded logs and fallen trees have been so closely interwo-

ven across the river in some places, that complete bridges are formed, upon which vegetation grows, and which entirely conceal the channel. The valley of the river became, and remains, a succession of swamps, extending about three hundred miles in length, with a width varying from fifty to seventy-five miles. All arable lands intervening, are said to be of the most fertile description, producing abundant crops of wheat, corn, tobacco, and good cotton. But there are stated to be forty-five townships in the State of Missouri alone, returned as drowned lands, not worth, in their present condition, the cost of surveying them. Yet practical men, well acquainted with the country, believe it to be perfectly feasible to drain those lands, and thus restore to the world, a country and a soil, capable of sustaining a very large population. Little River is one of the tributaries of St. Francis and navigable for a short distance.

The KASKASKIA RIVER, in Illinois, has a course of about 300 miles, and enters the Mississippi a few miles below the town of Kaskaskia. It is navigable in seasons of high water, as far as Vandalia, 150 miles from its mouth, and steamboats often ascend as far as Carlyle, which is 100 miles up. It is 150 yards wide at its mouth, and drains a country which is generally fertile. The chief obstructions in this river are logs and impending trees.

The MERRIMAC, which enters the Mississippi about fifteen miles below St. Louis, has its origin in the mineral regions of Missouri, and may be ascended by small steamboats, in time of high water forty to fifty miles.

The ILLINOIS is one of the finest and most important streams of the west. It drains an extremely valuable and fertile region, prolific in nearly all sorts of grain, grasses, and stock. It is navigable, at nearly all seasons, except the winter, about 250 miles from its mouth. It enters the Mississippi about twenty miles above the mouth of Missouri. For a considerable distance above its mouth (which is 400 yards wide,) the river is unusually straight, with a gentle current. The chief obstructions in the river are sandbars. Its principal tributaries are, the Kankakee, Des Plaines, Fox, Spoon, and Sangamon rivers, all of them considerable streams. The Sangamon is navigable, when the waters are high, about seventy-five miles, and a steamboat of the larger class has been within a few miles of Springfield. Connected, as the Illinois is now about to be with the great Lakes, by the Illinois and Michigan Canal, it is destined soon to become one of the most interesting and important channels of interior communication in the United States.

The DES MOINES River is one of the most beautiful tributaries of the Mississippi. It empties into the Mississippi in latitude 40 deg. 22 min. and has its origin in the Shetek Lakes, near the middle of the Coteau des Prairies. Its course is about 400 miles, and its average descent nearly three feet to the mile, running from N. W. to S. E. It flows through a wide and deep valley, receiving tributary water through deep and long ravines which intersect its shores, and also from the Raccoon Fork, the Lizard and Cedar rivers, Boone's river, and Moingonan's Brother. Upon these waters are many fine lands, some good water power, good carboniferous limestone

for building, and in some places deposits of coal. It may be considered as navigable for steamboats of a small class, one hundred and fifty miles from its mouth, and with moderate improvements, may be made navigable 300 miles. A canal of a little over a mile in length tapping Dry Wood Lake, might be cut which would connect the waters of the Des Moines with those of the St. Peters. Near the mouth of the Des Moines are the towns of Keokuk, in Iowa, of Warsaw, in Illinois, and of Alexandria, in Missouri; the former place having 2,500 inhabitants. These places are also near the foot of the Lower or Des Moines Rapids of the Mississippi, the first difficulties encountered in the navigation of these rapids, being about four miles above the mouth of the Des Moines.

Rock River, which enters the Mississippi in the northwestern part of Illinois, rises in Wiskonsan, and its principal tributary has its source in the rich mineral region of southwest Wiskonsan. It waters one of the finest and most fertile agricultural regions, and is said to be navigable for steamboats of a small class about 200 miles. The principal obstruction in this river, are the Rapids, about three and a half miles from its mouth, upon which the water is not often more than eighteen inches deep. Small steamboats have been up, with some difficulty, as high as Grand Detour, upwards of 100 miles from the mouth of the river.

The Wiskonsan River has its source in the Mini Kette Kittigan Lake. This river and the Fox river, which empties into Green Bay, approach, at one place, within one mile of each other; and from that point to its mouth, 150 miles, the Wiskonsan is navigable for steamboats. A navigable intercommunication could be easily made between the Mississippi and Lake Michigan, by connecting the Fox and the Wiskonsan by a short canal. We are informed that by removing an obstruction at a narrow place called the Dells, and clearing the bed of a few sandbars, the river can be made navigable for about 300 miles. Steamboats are said to have been up as high as Point Boss, which is about 300 miles from the mouth. Large quantities of pine lumber annually go out of this river.

The St. Croix is a beautiful river, and navigable at all times, excepting during winter, fifty-five miles from its mouth, to the Falls. Lumber and cranberries are, at present, the principal articles brought out of it. A regular weekly packet runs in summer, between Galena and Stillwater, twenty-five miles up the St. Croix. Considerable quantities of lumber come out, also, of the Chippewa and Black rivers, which are navigable for short distances.

The St. Peters River, which enters the Mississippi eight miles below St. Anthony's Falls, has a course of 470 miles, and from its mouth to the mouth of the Red Wood, it is navigable for 250 miles. It is a beautiful river and waters a fine country.

The tributaries of the Missouri are very numerous, some of them destined to become of great importance, and deserve a more extended notice than we are here able to give them. We can now only name them. They are the Gasconade, La

Mine, Grand, Osage, Chariton, Kansas, Nishnabatona, Platte, or Nebraska, the Sioux, James, Poncah, or Niobrarah, the Yellowstone, &c.

The tributaries of the Ohio deserve, also, a more extended description. The Wabash, the Cumberland and the Tennessee especially, are streams of great value and interest.

It is difficult to embrace, in a single chapter, a proper view of the vast regions drained by the Mississippi and its tributaries. The physical geography and topography of the country, would fill an ample volume with interesting details. We may remark, in general terms, that it is a world in itself, capable of sustaining almost incomprehensible numbers of inhabitants, and of supplying their wants with the productions of the frigid and the tropical zones, of the east and the west, of highland and lowland: with the results of agriculture, of mining, of forests and fisheries, and of the various manufacturing arts.

Who are the people dwelling upon these streams, what the nature and extent of their pursuits, and what their relations with the government under which they live, will be subjects to be concisely treated of hereafter.

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## ART. VII.—JENKS AND THOMAS' BAGGING FACTORY.

Among the many manufacturing establishments of various kinds, which have been commenced in St. Louis within the last few years, there is, perhaps, no one upon a more respectable footing, or which is calculated to prove more beneficial to the farming interest of Missouri, than the Bagging Factory of Messrs. Jenks and Thomas.

There is an admirable system of economy developed in the plan of this establishment, that is highly creditable to the proprietors. While the hackling establishment prepares the hemp for market, the tow, which, without this process would be of little or no value if sold with the hemp, is converted into sacking; and is calculated to save a large amount of money which is annually paid for a foreign article. This is as it should be.

The following communication shows the nature and extent of the business done here:

### HEMP.

"The amount of hemp received at this port during the past year, shows an increase of some 20,000 bales, over the amount of previous year—which increase, we suppose, may be attributed to the fact, that the crop of 1845 was not all received during '46; but from 2,500 to 3,000 tons was held over, and brought out by the high prices of last year. The quality of the staple, last year, would not generally compare, however, with the previous crop. The growers of this crop, we do not think, usually understand what is for their interest, as well as for the

interest of the manufacturers. The general impression seems to be, that the larger and ranker the growth of the hemp, the better their crop—while such is not the case. If the planters would put from one to two bushels more seed to the acre, they would find their crop not only improved in quality, but increased in quantity. The more stalks grown upon a given space of ground, although the growth is not so large, produces more lint and less stalk, than the thinner and large growth. The demand for Missouri hemp is increasing, and our State will soon be looked to for the principal supplies of both water and dew-rotted. Already have manufacturers commenced locating here. As yet we have but one steam factory in our State, and this is in its infancy. The Bagging Factory of Messrs. Jenks & Thomas commenced operations about eighteen months since, in the northern part of our city, and large quantities of hemp are daily received, and discharged in the form of dressed hemp, bagging and sacking, from their establishment. Their manner of working, or rather, using the staple, is new, not only in the west, but, comparatively speaking, in the country. The hemp, as it reaches them, is in a bad state, (being directly from the brake,) both for shipping and manufacturing; and their first operation is to dress, or hackle the same, which is done by means of large machine dressers, which perform their work nearly or quite as well as the old mode of hand hackling, and with great rapidity, and leaves the hemp in a beautiful condition, being entirely cleared from tow and shives. From the dressers it is received by the press, which is large and powerful, where it is baled, covered, branded, &c., and is then ready for the eastern markets and cordage manufacturers. This room alone requires from three to four tons daily, to keep the machines and operatives employed. The tow taken from the hemp, after passing through the hackling, preparation, and spinning rooms, we at last see converted into sacking and bagging, in the weaving room, where nought is heard but the flying shuttle. By their mode of working, a much better article is produced, than by the old mode of working hemp. Of these finer qualities they turn out twelve hundred yards daily, and arrangements are now making to greatly increase the quantity. During the five months ending September 1st, they had passed through their dressers, 425 tons hemp, and manufactured 180,000 yards of bagging. They have 130 operatives, male and female, and work eleven hours per day. They occupy with their buildings, about 150 square feet, and the machinery is driven by an engine of about fifty horse power. Were it not for this establishment, the amount of bagging sent from this port would be very limited, as our receipts from hand looms on the Missouri and Mississippi are rapidly falling off. Received last year, 145,000 yards, while in 1845 our receipts were 422,000."

We are unacquainted with the culture and management of hemp, but the source whence we received the foregoing communication, entitles the observations of the writer upon that point, to the consideration of the hemp growers of the west.

# MINES AND MINING.

## MINERAL RESOURCES OF WASHINGTON COUNTY, MISSOURI.

We extract from the St. Louis *New Era* the following communication from FREDERICK WOOLFORD, Esq., of Washington County, Missouri:

*Mr. Editor*—Much has been said and written about the mineral wealth of Southern Missouri, but I have never seen or heard any observations on the valuable clays and materials which enter into the composition of China or Porcelain wares—necessaries for which we are dependent upon foreign countries exclusively. I desire to call the attention of the public, and of capitalists, through the medium of your useful paper, to the fact that in this county, and in this immediate neighborhood, all the requisite materials necessary for the manufacture of the most beautiful and substantial articles of China, Granite and common, or Liverpool ware, are to be found in the greatest abundance. About three years ago I commenced experimenting, in a small way, with a white ware establishment, assisted by two Englishmen, which I have since given up, as I could not produce the article desired. The clay which was first brought to the factory was so impregnated with iron, which oxydized in a high heat, and appeared on the surface of the ware, and produced a cream-colored ware with fine texture. Prosecuting my researches for a more pure and unadulterated clay, I have at length found, in the more primitive regions of our country, an abundance of pure Kaolin or China clay, of the whitest and finest possible kind, and another species known by potters as the Blue Ball or Pipe Clay. The China clay is found on the south side of the Ozark mountains, among the feldspar rocks; it is found there in every state of decomposition. The pipe clay is decomposing from a bluish-white flint in the mountainous districts. I have subjected them to a severe test by fire, after moulding them as thin as the most delicate article of China ware; and they have stood the strongest test I could expose them to—burning perfectly white and transparent, without crack or flaw; and furnishing a ware that will advantageously compare in whiteness and strength of texture with that brought from any other country

I have found an abundance of Steatite or Soap Stone, which is a sub-species of Mica. I have also found a Pot Stone that will make China ware, in the southern edge of Franklin county, (which is an adjoining county,) without any other mixture.

Feldspar of a good quality, and China Clay, have been discovered in Ste. Genevieve county, as also in this. Silex, Mica, Magnesia and Cobalt have been so repeatedly noticed as abounding in this county, that it is hardly necessary for me to say that they can be had here in any reasonable quantity for the purpose of manufacturing. Some of them are already prepared, and have become an article of exportation from our State. I am satisfied that I can show, in the mountains that surround our valley, all the materials requisite to prepare the best and finest

articles of China, Granite and Delft wares; and the water powers of this country are known to be numerous, affording the greatest facility for the erection of mills to grind and prepare the materials; with the abundance of material with which we are surrounded, why should we be dependent on foreign supply? From the experiments that I have made, I am satisfied that profitable investments of capital can be made in this business, the want of which alone has prevented me from engaging extensively in this branch of manufactory. My object is to invite experience and capital to unite with me in the enterprize, with a full persuasion that it may be made useful and profitable. In making this communication, it is not my object to sell lands or to speculate, but solely with the view of making the business useful and profitable to those who may engage in it.

The specimens of earths and minerals, with the wares produced from them, can be seen at my establishment near Caledonia, Missouri, and every information I possess will be freely communicated to any gentleman who may wish to engage in such business.

Any communication post-paid will be attended to.

FREDERICK WOOLFORD.

[We would suggest to our correspondent that it might be useful to him, and promote his views, if he would send to St. Louis the specimens, samples, &c., which he mentions. We shall be happy to aid him in promoting such objects as he proposes.—*Ed. Era.*]

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## ARKANSAS LEAD.

We received a few days ago, by the hand of Mr. Wood, a fine specimen of lead ore from the mines now worked by Mr. Moulton. A few days previous, we had the pleasure of conversing with Mr. M., himself, who, evidently, is a practical miner; and lately from the Galena country. Mr. Moulton is of opinion that the prospects for mining here are even better than in the Upper Mississippi region, embracing what has ever been regarded one the richest mineral districts in the known world. The mine worked by Mr. M. is ten miles from town, and one of the greatest advantages in his estimation in these mines is, their contiguity to navigation. But there is another advantage which should not be overlooked—the ore has been analyzed, and has been ascertained to be worth about $70 per ton for the silver, alone, which it contains. It may therefore be regarded as the true Argentine ore of lead. The ore, then, instead of being smelted in the ordinary way, should undergo the process of smelting. While we are upon this subject, we remark that this is not the only locality of lead in our State; this metal is known to abound in several sections.—*Little Rock (Ark.) Gazette.*

## DISCOVERY OF A GOLD MINE IN MICHIGAN.

A gold mine has just been found near Tecumseh, Michigan. A correspondent of the *Buffalo Courier* says the mine is situated in the east bank of the river, but a few feet above the water, the bank rising to the height of twenty-five or thirty feet, and so precipitously that the mine cannot be reached from above, but only by crossing the river. The gold is found principally in ore mixed, though it is said to be very rich, and many suppose it will yield 35 per cent. of the pure article. A few lumps have been found, weighing from half an ounce to an ounce and a half, which has been pronounced pure. It is stated that a company has been organized to work it, Messrs. Blanchard, Hewitt, and Blood acting as directors, and that quite a gold mania has sprung up in that section of country.

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## BRITISH NORTH AMERICAN MINING COMPANY.

The silver mine of the British North American Mining Company, known as Colonel Prince's Location, is attracting considerable notice at present, in consequence of the ascertained extent of the vein, and the exceeding richness of the ore. The *American Mining Journal* states, on what is deemed good authority, that the "vein has been distinctly traced for more than three miles on the north shore of Lake Superior, opposite Spar Island; and that the metalliferous portion is from three to five feet in width. The captain of the mine has sunk a shaft into the silver bearing portion several feet, with increased richness of the ore as he descended; and it would really seem, from the developments already made, that the mine of this company is the richest silver mine in the world. The depth of the vein cannot, of course, be determined; but if the experience of those who have worked silver mines elsewhere can have any application to this mine, the extent of its wealth cannot be well overrated.

We have just seen a number of specimens of ore taken from this mine, which are said to be a fair average of several barrels recently forwarded to the office of the company, in Montreal. They are very rich, containing, we should judge, near twelve per cent. silver. We also saw a bar of pure silver weighing about five pounds, smelted from the ore, and about forty pounds of the ore, which had been roasted and pulverized preparatory to smelting. There is a large force now at work on the mine, and it is the intention of this company to have one hundred tons of ore ready for shipment on the opening of navigation in the spring. A considerable quantity is now on its way to Montreal, where it is daily expected. The annual report of this company was published in the ninth number of the *Mining Journal.*

## CONSUMPTION, ETC., OF TEA IN THE UNITED STATES.

The following statement exhibiting the quantity and value of teas consumed annually from 1821 to 1847, and the amount of duty which accrued on the same from 1821 to 1832, together with the average rate of duty per pound, and its equivalent ad valorem, during the years in which the article was subjected to duty on importation, is derived from the Treasury Department, Register's Office, December. 7, 1847:

| Years ending Sept. 30. | Quantity. Pounds. | Value. Dollars. |
|---|---|---|
| 1821 | 4,538,223 | 1,080,264 |
| 1822 | 5,305,588 | 1,160 579 |
| 1823 | 6,474,934 | 1,547,695 |
| 1824 | 7,771,619 | 2,224,203 |
| 1825 | 7,173,740 | 2,246,794 |
| 1826 | 8,482,493 | 2,443.587 |
| 1827 | 3,07[illegible]885 | 942,439 |
| 1828 | 6,289 581 | 1,771,993 |
| 1829 | 5,602.795 | 1,531,460 |
| 1830 | 6.873,091 | 1,532,211 |
| 1831 | 4.651.681 | 1,057 528 |
| 1832 | 8,627,144 | 2,081,339 |
| 1833 | 12,927 643 | 4,775,081 |
| 1834 | 13,193,553 | 5,122,275 |
| 1835 | 12,331,636 | 3,591,293 |
| 1836 | 14,484,784 | 4,472,342 |
| 1837 | 14,465 722 | 5,003,401 |
| 1838 | 11,978,744 | 2,559,246 |
| 1839 | 7,748.028 | 1,871,824 |
| 1840 | 16,86 ,784 | 4,059.545 |
| 1841 | 10,772,087 | 3 075.332 |
| 1842 | 13,482,645 | 3,567,745 |
| 1843* | 12,785.748 | 3.405,627 |
| 1844† | 13,064 327 | 3,152,225 |
| 1845† | 17,162,550 | 4,809,621 |
| 1846† | 16,891.020 | 3,983,337 |
| 1847† | 14,221,910 | 3,200,058 |

| Years ending September 30. | Duties. Dollars. | Average rate of duties. Cents. | Equivalent ad valorem duties. Per Cent. |
|---|---|---|---|
| 1821 | 1,442,337 13 | 31.45 | 133.52 |
| 1822 | 1,637,835 02 | 30.87 | 141 12 |
| 1823 | 2,000,754 60 | 30.09 | 129.27 |
| 1824 | 2,587,949 13 | 33.03 | 116.35 |
| 1825 | 2.405.355 02 | 33.53 | 107.05 |
| 1826 | 2,911,188 17 | 34.32 | 119.13 |
| 1827 | 1,029,360 65 | 33.52 | 109.22 |
| 1828 | 2,138.487 54 | 34.00 | 120 68 |
| 1829 | 1.889.822 75 | 33.73 | 123.40 |
| 1830 | 2,287.364 68 | 32 28 | 149.28 |
| 1831 | 1,478,496 22 | 31.75 | 139.80 |
| 1832 | 1,216,427 30 | 14.01 | 58.44 |

## EXPORT OF CORN AND CORN MEAL FROM THE UNITED STATES.

The following table exhibits the quantity of corn and corn meal exported from the United States for fifty-seven years, commencing in 1791 and closing in 1847:

TOTAL EXPORTS OF CORN AND CORN MEAL FROM THE UNITED STATES FROM 1791 TO 1847*

| Years. | Corn. Bushels. | Corn meal. Barrels. | Years. | Corn. Bushels. | Corn Meal. Barrels. | Years. | Corn. Bushels. | Corn meal. Barrels. |
|---|---|---|---|---|---|---|---|---|
| 1791 | 1,713,214 | 351,695 | 1810 | 1,054,252 | 86.744 | 1829 | 897,656 | 173,795 |
| 1792 | 1,964.973 | 263,405 | 1811 | 2,790,850 | 86,744 | 1830 | 444,109 | 154,301 |
| 1793 | 1,233,763 | 189,715 | 1812 | 2,039,999 | 147,426 | 1831 | 561 312 | 2[illegible],604 |
| 1794 | 1,505,977 | 241,570 | 1813 | 1,486.970 | 90,810 | 1832 | 451.230 | 146.710 |
| 1795 | 1,935,345 | 512.445 | 1814 | 61,284 | 52,521 | 1833 | 437.174 | 146.678 |
| 1796 | 1,173.552 | 540,236 | 1815 | 830,516 | 26,438 | 1834 | 303.449 | 149.609 |
| 1797 | 8[illegible]4,922 | 254,799 | 1816 | 1,077,614 | 72,634 | 1835 | 755.781 | 166.782 |
| 1798 | 1,218,231 | 211,694 | 1817 | 387.451 | 89.119 | 1836 | 124,791 | 140,617 |
| 1799 | 1,200 492 | 231,226 | 1818 | 1,075.190 | 106,762 | 1837 | 151,275 | 159,435 |
| 1800 | 1,694,327 | 338,108 | 1819 | 1,086,762 | 120,029 | 1838 | 172.321 | 171,843 |
| 1801 | 1,768 162 | 919,353 | 1820 | 533.741 | 135.271 | 1839 | 162.306 | 165,627 |
| 1802 | 1.633,283 | 266,816 | 1821 | 607,277 | 146,318 | 1840 | 574,279 | 207,063 |
| 1803 | 2,079,6[illegible]8 | 133,606 | 1822 | 509,093 | 131,669 | 1841 | 535.727 | 232,284 |
| 1804 | 1,944,873 | 111,327 | 1823 | 749,031 | 148,223 | 1842 | 600 308 | 209.190 |
| 1805 | 861.501 | 116.131 | 1824 | 779.297 | 141,501 | 1843 | 672.6[illegible]8 | 174,254 |
| 1806 | 1,064,263 | 109,312 | 1825 | 869,644 | 17[illegible],723 | 1844 | 825,282 | 247.882 |
| 1807 | 1,018,721 | 136,460 | 1826 | 805,381 | 187,225 | 1845 | 84[illegible],184 | 2[illegible]9,030 |
| 1808 | 249,533 | 30,818 | 1827 | 978,664 | 158,652 | 1846 | 1,826.068 | 298.790 |
| 1809 | 522,049 | 57,260 | 1828 | 70,492 | 131,041 | 1847 | 17,272,815 | 945,039 |

* Nine months, ending June 30. † Years ending June 30.

## TO THE PUBLIC PRESS.

Although we propose to publish a Journal of Agriculture, Manufactures, &c., yet it would be unreasonable to suppose that we were acquainted with all the details connected with these several pursuits; or that we could acquire a general knowledge of the business and interests of every part of the country, without the co-operation of others.

Feeling the importanc of opening a correspondence with the agriculturists of the west, we called their attention through the last number of the Western Journal, to the importance of organizing agricultural societies in every county. But aware that farmers are generally slow in their movements in regard to such matters, we respectfully invite the publishers of newspapers to second our views by bringing the subject of agricultural societies before their readers.

Furthermore, we should be pleased if the conductors of the press throughout the west would encourage their readers to furnish them with facts connected with agriculture, manufactures and commerce; including the statistics of the business and population of the towns and villages; the kind of staples which are cultivated in each county—the mines, minerals and water power; and also a general description of the soil, surface and forest.

Such facts would greatly extend the usefulness of the journals of the interior, and make them more desirable to those who reside at a great distance from the place of publication.

A little attention to this subject would enable us to make the Western Journal a complete repository of the statistics of the west, and greatly enhance its value as a book of reference, especially to the publishers of newspapers.

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## TO AGENTS.

Such individuals as have been requested to act as agents, will please to let us hear from them at an early day.

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## CLUBS

Will be furnished with six copies of the Western Journal for fifteen dollars, for the term of one year.